Rutgers, the State University of New Jersey
Office of Information Technology

NBCS

New Brunswick Computing Services
2005-2006 Annual Report

THE STATE UNIVERSITY OF NEW JERSEY
RUTGERS

Letter from the Director:

Welcome to the second edition of the NBCS Annual Report!

As Director of New Brunswick Computing Services, I want to start off by expressing how proud I am of the talented staff that is responsible for the marvelous technical and customer service oriented achievements that you will read about in this report. The 2005-2006 Academic Year represented the first time that all of the divisions you will read about came together into a single organization. As such, it was a year of transition in both organizational procedure and service philosophies.

If there were to be a catchword for the year, the word would be "teamwork." Teamwork is something I value greatly as a leader, and something I try to encourage and promote in both my management team and the organization as a whole. It is no coincidence that the first section in this report highlights the accomplishments of "Combined Group Projects." In this section, you will see how the diverse technical and support staff within NBCS worked together to provide excellence in service and support to our constituent community, as well as advice and guidance to the larger higher education community. NBCS accomplished many things over the course of the last year, but it is the accomplishments that were achieved through combined group efforts of which I am most proud.

I am also proud of the recognition that the group received over the course of the last year. NBCS presented at the national and regional Educause conferences in 2005, as well as at the 2005 ResNet Symposium. At the national Educause conference, "From the Pit to the Pinnacle - Transformation of Help Desk Services at Rutgers University" was presented jointly by Mary Ann Chianelli, John Fulton, and me. The room was packed and all attendees left with a demo disk of ruQueue (more about that later). At the Educause Mid-Atlantic Regional Conference, Ken LeCompte and Aaron Richton presented on RU Wireless and discussed strategies for wireless networking implementations with other universities from the region. Two presentations from NBCS were featured at the 2005 ResNet Symposium. In the first, Keri Budnovitch and John Fulton featured "ruQueue - An Open Source Trouble Ticketing System for Higher Education." ruQueue was developed from the software NBCS uses to run its own Help Desk, and was now released into the public domain. Additionally, Albert Vasquez and Jacqueline Hindle presented the "Rutgers Residential Networking Registration and Authorization System." The presentation highlighted how teamwork between various NBCS divisions was able to build a model system for authorizing and registering students living in the residence halls.

In closing, I would like to take a moment to offer thanks to the members of the Annual Report Committee who made this report possible. I would like to offer a special thanks to Jacqueline Hindle, who chaired the committee, for putting up with my nitpicking edits, frequent delays, and incessant bad jokes.

I am proud to be a member of the NBCS Team. I hope you enjoy the report!
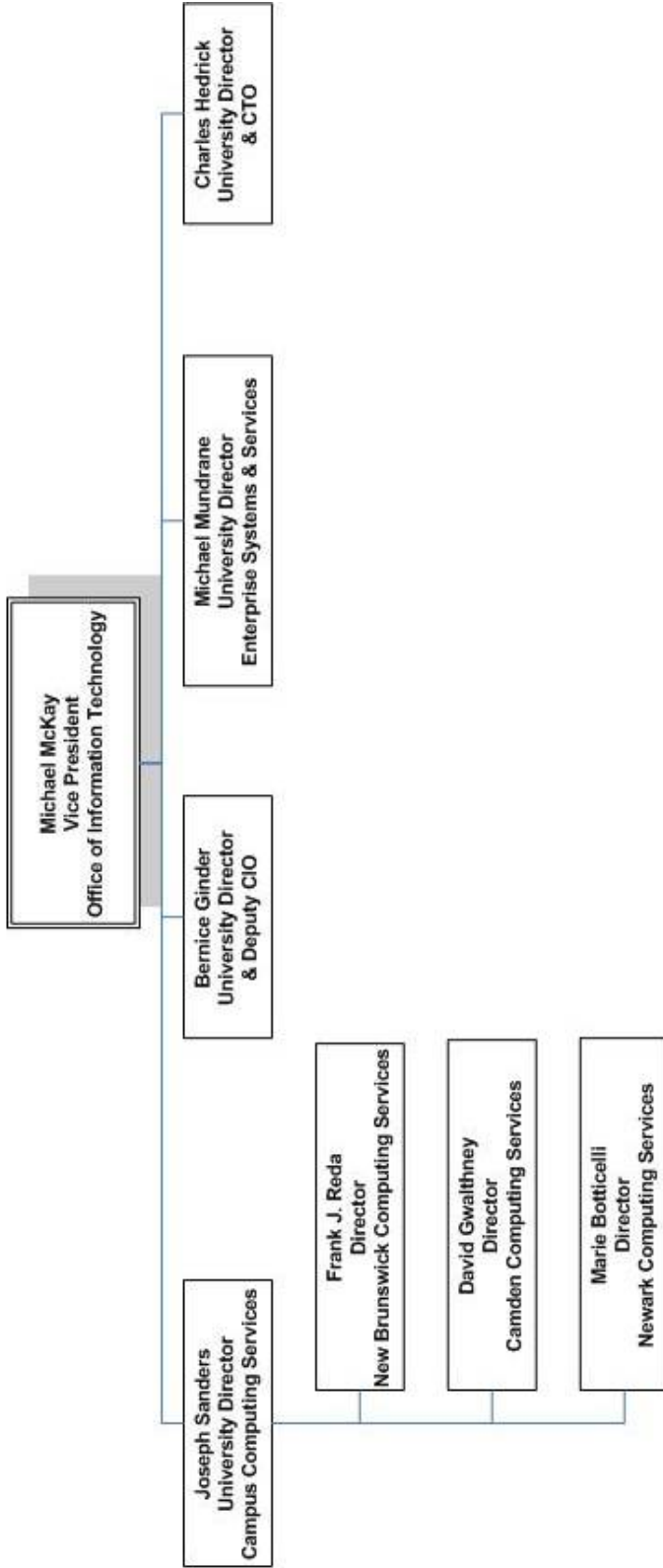
Frank J. Reda

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Michael McKay
Vice President
Office of Information Technology

Charles Hedrick
University Director
& CTO

Michael Mundrane
University Director
Enterprise Systems & Services

Bernice Ginder
University Director
& Deputy CIO

Joseph Sanders
University Director
Campus Computing Services

Frank J. Reda
Director
New Brunswick Computing Services

David Gwalthney
Director
Camden Computing Services

Marie Botticelli
Director
Newark Computing Services

New Brunswick Computing Services

Last updated August, 2006

Frank Reda — Director

Hollie Ferreira — Administrative Assistant

Edward L. Humphrey Jr — Associate Director, Central Systems & Services

- Tom Bundishuh — Manager, Operations Technical Support
  - John Wieczorek — Systems/Programmer/Administrator
- Jack Chen — Systems Programmer/Administrator
- Kevin Conover — Systems/Programmer/Administrator
- Matt DeVries — Systems/Programmer/Administrator
- Vladimir Gabrielescu — Systems/Programmer/Administrator
- Basil Knech — Systems/Programmer/Administrator
- Bryan Loniewski — Systems/Programmer/Administrator
- Vacant — Systems/Programmer/Administrator
- James Tuan — Systems/Programmer/Administrator
- 8 Part-Time Staff

Albert Vasquez — Project Manager, LAN Support Services

- Raymond Hu — Systems Programmer/Administrator
- Jennifer Merz — Telecommunications Analyst
- Kristopher Corso — Telecommunications Analyst

Carol May — Administrative Assistant

Wayne Higgins — Associate Director, Campus Computing Facilities

- Stacey Sita — Manager, Campus Computer Facilities (Cook/Douglass)
  - Pat Douglas — Asst. CCF Manager
  - 69 Part-Time Staff
- Winnie Ling Luper — Manager, Campus Computer Facilities (Busch)
  - Michelle Boudreau — Asst. CCF Manager
  - 91 Part-Time Staff
- Leroy Wilkins — Manager, Campus Computer Facilities (CAC)
  - Mostafa Khalifa — Asst. CCF Manager
  - 104 Part-Time Staff
- Melissa Malana — Manager, Campus Computer Facilities (Livingston)
  - Cody Burke — Asst. CCF Manager
  - 55 Part-Time Staff
- Brian Luper — Systems Programmer/Administrator
- John Hindle — Systems Programmer/Administrator
- Kenneth LeCompte — Systems Programmer/Administrator
- Randall Newman — Systems Programmer/Administrator
- Aaron Richton — Systems Programmer/Administrator
- Christopher Suleski — Systems Programmer/Administrator
- Joseph Szabo — Systems Programmer/Administrator
- 4 Part-Time Staff

Karl Budnovitch — Associate Director, Computing Support Center

- J.T. Chirco — Communications & Training Coordinator
- James Oleksiak — User Support Services Specialist
  - Valerie Veltre — 2nd Shift Supervisor
    - Vacant — Computer Operator
  - James Fay — 3rd Shift Supervisor
    - Michael Gradin — Computer Operator
  - 21 part-Time Staff
- Ana Verma — User Services Manager Help Desk/Operations
  - Rob Bowell — User Support Services Specialist
  - Joseph Donato — User Support Services Specialist
  - John Abbott — User Support Services Specialist
  - Chris Jarocha-Ernst — Consulting User Support Services Specialist
  - Daniel Koft — Consulting User Support Services Specialist
  - 40+ Part-Time Staff

Jacqueline Hindle — Unit Computing Manager Residential Networking

- Brian Boccardi — Telecommunications Analyst
- 48 Part-Time Staff
- 1 Part-Time Staff
- 1 Part-Time Staff

David Souren — Associate Director, Computer Store/Repair

- Lori Seymour — Administrative Assistant
  - Dawn Gandy — Principal Accounting Clerk
- Dan Dowd — Manager, Computer Store
  - Eric Flaherty — Computer Store Associate
  - 1 Part-Time Staff
- Bob Schwarz — Manager, Computer Repair
  - Clemente Bottone — Senior Technician Repair
  - Michael Halley — Digital Electronic Services Technician
  - James Verrillo — Senior Technician Repair

Roger William — Manager, User Services Old Queens Technical Support Team

- Thomas Czerula — Systems Programmer/Administrator
- Wentuo Huang — Systems Programmer/Administrator

Mary Ann Chianelli — Associate Director, MSSG

Danielle Berlingeri — Administrative Assistant

- Armen Varjabedian — Assistant Director
  - Alex Daysudov — Systems Programmer/Administrator
  - Andre Rivera — Systems Programmer/Administrator
  - Samuel Shelley — Systems Programmer/Administrator
  - Jacqueline Thomas — Systems Programmer/Administrator
  - Joseph Miklocjik — Systems/Programmer/Administrator
  - Michael Edwards — Systems/Programmer/Administrator
  - Rich Hofsommer — Systems/Programmer/Administrator
- John Fulton — Senior Web Designer
  - Randy Suchcicki — Systems Programmer/Administrator
  - Timothy Mills — Systems Programmer/Administrator
  - Part-Time Students (2)
  - Susan Schwerdt — Licensed Software Coordinator
  - Part-Time Staff (1)
  - Joshua Hogle — Systems Programmer/Administrator
  - Eric Olstad — Systems Programmer/Administrator
- Walead Abdrabbouth — Project Manager
  - Jeff Fein-Worton — Web Developer
  - Scott Holodak — Systems Programmer/Administrator
  - Ramon Quezada — Systems Programmer/Administrator
  - Jeff Ubhaichal — Web Developer
  - Vacant Web Developer
  - Part-Time Staff (2)

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NBCS Combined Group Projects, 2005–2006

Introduction

The groups that comprise NBCS work on many collaborative efforts throughout the year to benefit the University community. Collaborative efforts save resources, improve communication between groups, and reduce redundancy in similar or identical efforts.

This year, several projects and goals were accomplished through the combined efforts of two or more NBCS groups. Involving the expertise of multiple groups resulted in well developed products and services for the University. Examples of large scale successes this year are the Information Technology Certificate Program, SMTP Authentication, and the student employee hiring drive. Projects such as the open source release of HDRT, known as ruQueue, brought national recognition to Rutgers University at two major conferences, whereas smaller scale projects, such as the Facilities Maintenance Services IT security plan, brought increased resources to a group within the University through a coordinated effort between two groups.

Information Technology Certificate Program

This year, the creation of the ITCP (Information Technology Certificate Program) was a major joint accomplishment shared by various NBCS groups. Through the cooperation of UHR, Internal Audit, and OIT, it is now possible for computer professionals throughout Rutgers to attend classes which are designed to give them insight into what resources and tools are available to simplify their daily computing tasks. This program is a good vehicle by which NBCS can readily let the University community know more about OIT services and policies. ITCP was designed as a program that would be beneficial to any new University employee with an IT title, such as UCS and UCM. In practice, it was found that the majority of the participants in the program have been employed at Rutgers for many years, and, although they regularly handle computing responsibilities within their department, many do not hold official IT titles. The ITCP effectively addresses a need of many of these individuals to gain a better understanding of what OIT has to offer. Classes have been regularly offered with significant attendance since the program began in September, 2005. OIT's overall participation in the program is coordinated by NBCS, which has been the major contributor. Although other entities within OIT do take part (notably the IPS (Information Protection and Security) group of ESS (Enterprise Systems and Service)) the vast majority of the classes was designed by and is taught by staff members from MSSG and the Support Center. A number of the classes that were traditionally offered as part of the NBCS Education Series is now also part of the ITCP. Please see Appendix 10 (page 97) to view the ITCP course offerings.

In the 2005-2006 Fiscal Year, 128 people enrolled in the ITCP program, and 38 completed it. Since the inception of the program, OIT taught 73 sessions, with an overall attendance of 770 students.

SMTP Authentication

In an effort to help alleviate unwanted Spam and provide a safer computing environment for the general user community, NBCS designed, developed, and tested SMTP (Simple Mail Transfer Protocol) authentication. SMTP authentication forces desktop email clients to authenticate with a valid Rutgers NetID and password before sending email messages using the CSS systems (Eden, RCI, NBCS, RUlink). Use of SMTP authentication proves that the party sending email is a valid Rutgers University entity, and helps prevent Rutgers University systems from becoming blacklisted by other ISPs, such as AOL, due to large amounts of Spam coming from University systems. Implementing SMTP authentication required all users to make several small changes to their email client configuration in addition to using SSL (Secure Socket Layer). CSS designed, developed, and tested SMTP authentication on their servers. The NBCS Help Desk created documentation to assist users and UCSes (Unit Computing Specialists) with the transition, and provided support to the user community.

As part of the user support and documentation, the Help Desk published a webpage (http://www.nbcs.rutgers.edu/smtp/smtp.php3) detailing the need for SMTP authentication and explaining the initiative. The webpage also contains links to step-by-step instructions of the changes that need to be made in supported email clients. Ten documents were created to assist users with the transition. Additionally, several email announcements were sent at regular

intervals to the University community to prepare users for the changes they needed to make. Residential Networking served as a test community for initial documentation for SMTP authentication. ResNet staff was able to provide feedback from users to make necessary adjustments to documentation and system and network configurations. MSSG also collaborated with the Help Desk and CSS to develop and test documentation and configurations.

The Help Desk served as the main support contact for users with questions or problems configuring their software to using SMTP authentication. During the transition period, the Help Desk handled 140 email support contacts, and 160 Help Desk support tickets were created.

CSS also provided a way for valid Rutgers hosts to be added to an SMTP white list. The white list is a list of pre-approved IP addresses that are allowed to send mail without authenticating with a valid NetID and password. Devices, such as printers sending "toner low" messages, and switches and servers sending outage notifications to administrators, are unable to authenticate. RPs (responsible persons) can request for such devices to be added to the white list to be exempt from authentication. CSS conducts an annual assessment of the white list, and checks for a valid MAC and IP pairing to ensure that devices on the list are correct.

SMTP authentication was successfully deployed to the University community in the spring 2006 semester.

Mailman
Mailman, an open source tool replacing ListServ, was implemented by CSS in the spring 2006 semester. Mailman is software used to manage electronic mailing lists. It allows for a mailing list address to be set up to which users can subscribe. When email is sent to the mailing list, the message is distributed to all of the addresses that are subscribed to it. Mailman lists can be subscribed to, unsubscribed from, and managed via a web-based interface or through email. The primary objectives of migrating to Mailman were significant improvements in the performance of the web-based user interface, more efficient processing of messages, improved systems management and administration capabilities, and the implementation of a scalable architecture to handle anticipated increase in service usage. The

implementation also resulted in a cost savings to the University for software licenses. This includes various end-user webtools, as well as Level 2 support of webtools.

The Help Desk provided Level 1 support to users transitioning lists from Listserv to Mailman. Users used an online form, provided by CSS, to request that their lists either be migrated to Mailman or removed from the system. The Help Desk answered many questions about the transition process, and continues to address support questions about how to create, use, and manage Mailman lists.

Approximately 1,400 mailing lists were migrated from Listserv to Mailman, including all archives and subscribers. This project also acted as an audit of all of ad-hoc mailing lists; approximately 1,600 lists were not migrated because their owners no longer wanted to keep the lists. NBCS Operations worked in conjunction with CSS staff in a coordinated effort to successfully complete this undertaking. Members of the Operations team who previously supported Listserv continue to work in a similar role supporting Mailman. During this transition, the Help Desk received 374 email contacts about the Mailman transition, and Operations handled approximately 200 HDRT tickets as well as numerous interactions with the user community to make the transition as smooth as possible. During the Listserv to Mailman transition, approximately 80 new Listserv lists were created (and then converted) and 40 new Mailman lists were created. The Help Desk currently receives 50-70 Mailman support requests each month.

Jabber
Central Systems and Services completed development and systems administration work to deploy a beta version of the Rutgers Secure Instant Messaging solution, based on Jabber. Jabber is a secure alternative to consumer instant messaging services. It allows for secure instant messaging communication between users at the University, and all Rutgers University students, faculty, and staff can use it by logging in with their Rutgers NetID and password. CSS initiated a project team that continued the trial and use of the tool locally.

The Computing Support Center participated in the Jabber project by testing and suggesting clients for Windows, Macintosh, and GNU/Linux/UNIX. After testing, the group

selected GAIM for Windows and GNU/Linux/UNIX, Adium X for Mac OS X, and JWChat for web based Jabber. Documentation was developed for all of the programs and is available online at http://oit.rutgers.edu/rutgersim/.

CCF lab supervisors and managers tested a Jabber chat room and worked closely with CCS staff to set up the chat room. Throughout testing, questions from CCF student supervisors were addressed by CCF full time staff, and problems were escalated to the technical staff. CCF officially started using Jabber in June 2006 to coincide with the training of new consultants.

The Help Desk staff currently uses Jabber for internal communication and reports any errors or bugs that are discovered to CSS. Using Jabber allows the Help Desk staff to communicate securely across long distances and gives the Help Desk staff the opportunity to use a new service before it is made available to the rest of the University community. This prepares the Help Desk staff to support the Jabber service and help others when it becomes available.

ruQueue

The open source release of ruQueue in the spring of 2005 was a project made possible by the combined efforts of MSSG and the Computing Support Center. The web based trouble ticket system HDRT was initially developed by MSSG for the NBCS Help Desk. In order to successfully release HDRT under an open source license as ruQueue, John Fulton of MSSG and Keri Budnovitch, Jacqueline Hindle, Joseph Donato, and John Abbott of the SC (Support Center) wrote a comprehensive guide detailing setting up the application on a web server, configuring the system for customized use, and utilizing the system in a support center environment. Documentation was written in Texinfo, which allows documentation to be easily converted to different formats such as PDF and HTML. ruQueue was first announced at the ResNet Symposium in June 2005, where it was presented by CSC Associate Director Keri Budnovitch and MSSG Systems Programmer John Fulton. The program was also the subject of a presentation by NBCS Director Frank Reda

and Associate Director Mary Ann Chianelli at the annual Educause conference in October 2005.

IT Security Plan for Facilities Maintenance Services

MSSG and LSS were contracted by Facilities Maintenance Services during the fall 2005 semester to coordinate and develop a departmental security plan. LSS conducted an onsite survey of the existing infrastructure and identified systems and services to be secured. The team developed and verified a security plan and strategy for a firewall implementation for Facilities, and created a Visio diagram to represent the network layout. Data collected by the network survey and the system survey was used to create security recommendations. MSSG coordinated the project with Facilities staff to gather departmental information concerning property management, inventory data, database information, procedures, and LSS's network security recommendation to develop a comprehensive security plan for the department.

Student Employee Hiring

For the past five years, CCF, the Help Desk, ResNet, and NBCS Operations have worked cooperatively on an annual drive to hire student employees. Consultants interviewed and hired in the spring begin employment the following fall. Approximately 400 NBCS student consultants are employed across the four campuses. Frequent turnover makes a successful, cooperative effort essential, and much effort is dedicated to the hiring program.

NBCS Student Hiring Statistics			
	Candidates Interviewed	Candidates hired	Candidates waitlisted
CCF	502	136	103
Help Desk	147	20	30
ResNet	78	14	15
Operations	38	18	3
TOTAL	765	188	151

This year, the hiring effort was jointly led by Melissa Malana and Winnie Ling Luper of CCF, and Joe Donato of the Help Desk. Staff from all groups collaborated on several initiatives essential to the hiring process. During the 2005-2006 Fiscal Year, the hiring committee developed an employment application, which addresses the hiring needs of all the groups

involved. The committee also created an interview assessment tool based on job requirements to guide interviewers in assessing candidates fairly. A web portal was used to share information pertaining to the hiring process, and three subcommittees were charged with planning different aspects of the effort.

The Advertising subcommittee was charged with advertising the hiring effort to University students. Signs and flyers were posted throughout New Brunswick/Piscataway campus, in dormitories, student centers, classroom buildings, and CCF labs. Bulk email detailing the hiring drive was sent to all dorm residents and all Eden account holders.

This year, a number of new advertising methods were implemented. In past years, an advertisement was placed in the Daily Targum. According to applicant feedback, this proved to be an ineffective means of advertising; less than 10 applicants reported the newspaper as where they heard about NBCS student jobs. This year, advertisements were posted in the popular college social networking website, Facebook (www.facebook.com). This approach proved to be more successful; 11% of applicants reported hearing about NBCS student job opportunities via Facebook. In past years, small signs were posted on all the monitors of the CCF lab workstations. While effective, this method was time consuming and costly. Taking advantage of the technology available in the labs, the desktop wallpaper on the lab machines was used to advertise the hiring effort. To advertise the positive aspects of employment with NBCS, the student hiring webpage was updated to include testimonials from current student employees who related the benefits of working for NBCS. A number of information sessions were held on Busch Campus and College Avenue Campus in February to further advertise and provide information on the various student positions available. Staff from each of the hiring groups was on hand to answer questions from prospective applicants and to present information on the application process. Over 80 individuals attended; feedback surveys indicated that the sessions were well received, that the sessions provided useful information on the various jobs available, and that most attendees intended to apply for employment.

The Hiring Training subcommittee was charged with planning and presenting a training session on several hiring and recruitment topics geared toward CCF, the Help Desk, ResNet, and NBCS Operations staff. The training session was held on February 17, 2006 in the Busch Student Center Multi-Purpose Room. Topics included: determining required knowledge, skills, and abilities of prospective employees; screening applications; developing interview questions; interviewing techniques; and illegal interview questions. This subcommittee also developed instructional documentation on HATS, the primary administrative tool used by all groups during the hiring drive.

The NEO (New Employee Orientation) subcommittee was charged with planning all aspects of the orientation session which tool

Jim Fay of NBCS Operations helps new consultants sign in at the New Employee Orientation.

New consultants listen to presentations at NBCS's New Employee Orientation in April, 2006.

Mike McKay, Vice President of the Office of Information Technology, welcomes new NBCS consultants to the organization.

place on April 23, 2006 in ARC. Staff from all groups provided assistance during the week leading up to the orientation to review payroll paperwork, prepare information packets for new employees, and prepare other materials.

Approximately 300 new student employees attended the NEO. New employees received information packets detailing staff policies. The

Hiring and Application Tracking System

orientation session was prefaced with a video that featured interviews with various student staff from CCF, the Help Desk, ResNet, and Operations.   New employees received information packets that detailed training requirements and scheduling policies. OIT Vice President Michael McKay, NBCS Director Frank Reda, University Director for Campus Computing Services Joseph Sanders (via videotape), Computing Support Center Associate Director Keri Budnovitch, and CCF Associate Director Wayne Higgins all gave short presentations about OIT, the benefits of working for NBCS, and the importance of customer service in OIT. Student staff members spoke about a typical day on the job as a student employee in each of the hiring groups. Additionally, information on training, scheduling, payroll, recognition, and reward programs was presented. Staff also assisted new employees with resolving any outstanding paperwork issues at the NEO. Most payroll paperwork was successfully completed within one week of the NEO. The NEO was shortened from previous years by one hour, saving over $2,000 in staff wages. Feedback from the new session was very positive.

Aaron Richton and Christopher Suleski worked closely with Melissa Malana to rewrite HATS (Hiring and Application Tracking System), a software application used to select and hire student employees. Major features of HATS include online application submission, application sorting and searching, candidate rating, email functions, interview scheduling, and statistical reporting.

Employment and payroll paperwork is a critical component of hiring new staff. In prior years, the process of completing and verifying the accuracy of paperwork was done by hand in person during the NEO, and was extremely time-consuming and error prone. A paperwork component was designed as part of HATS which allowed payroll paperwork to be generated and tracked efficiently. Under the new process, individuals who were offered positions with NBCS were able to accept or decline their employment offers and enter information to complete the required University payroll paperwork forms online. The paperwork component of HATS allows NBCS staff to generate payroll forms, perform basic error checking on completed forms, and maintain lists of individuals who have completed paperwork.

Most payroll paperwork was successfully completed within one week of the NEO.

As part of the combined hiring effort, CCF, the Help Desk, ResNet, and Operations also share student staff. This year, the groups created Staff Sharing Guidelines to define how to address various personnel issues, mostly pertaining to sharing staff among these groups. These guidelines are available to all CCF, Help Desk, ResNet, and Operations staff.

Outreach Events
NBCS participates in various outreach events each year, including events for potential and incoming Rutgers students, students participating in summer programs, and even fundraising efforts for causes outside of the University. These events are a great opportunity to tell students and parents what OIT and NBCS have to offer them, and range in number of attendees from hundreds to thousands. Please see Appendix 11 (page 98) for information on outreach events in which NBCS participated.

AREA REPORTS

Rutgers University Wireless Local Area Network
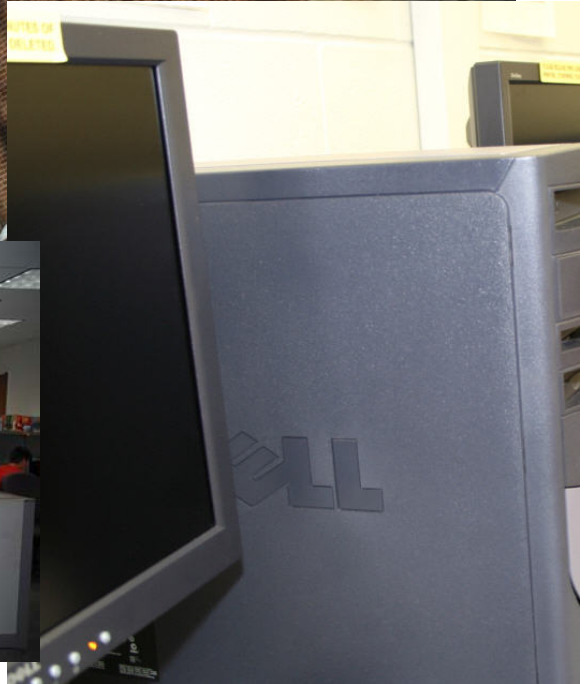
Campus Computing Facilities

Background

Wayne Higgins
Assoc. Director

The mission of CCF (Campus Computing Facilities) is to provide service, technology, and support to the University community and its affiliates.

CCF maintains 15 computer labs and the RUWireless/RUWired services on the New Brunswick/Piscataway campus. These services are available for academic computing, personal computing, and instructional use by students, faculty, staff, and University affiliates. Computer labs are located on all of the New Brunswick/Piscataway campuses, and are open year-round, with select labs open 24 hours during the regular semester. All of the labs offer identical services, are highly visible, accessible, and are ADA compliant. Dell PCs in the labs run Windows XP, and Macintoshes run Mac OSX 10.4. A wide array of software is available, including class software requested by academic departments for instructional use. All machines are equipped with a variety of communication and multimedia productivity software, and the main computer labs are equipped with scanning hardware and software. Color and black and white printing is provided at most labs, and 30%-recycled paper is used at all printing facilities. The labs contain 13 IMLs (Instructional Microcomputing Labs) with presentation capabilities and are available to the University community for instructional use. The Digital Media Lab is located in the Busch Computing Center, and is equipped with Windows based PCs and Macintoshes capable of video editing, 3-D rendering, and other multimedia uses.

CCF provides support for a wide variety of computing needs, including password changes, desktop support for the platforms and software packages available in the labs, and UNIX account troubleshooting. CCF actively participates in University outreach activities and is often the first point of contact for students. In addition to hosting NetID account creation and orientation sessions for a variety of departments and schools, CCF also manages the creation of guest accounts for UMDNJ students.

CCF employs approximately 300 student staff members who receive over 40 hours of specialized training in areas including account creation and troubleshooting, Windows XP, Macintosh OSX 10.4, UNIX, a wide variety of software programs, hardware troubleshooting, and customer service.

The CCF Netops group addresses all technical aspects of the computer labs, including networking, servers, printers, and workstations. Netops performs an annual upgrade of lab hardware and software, renews software licenses, purchases and installs hardware and software for computer labs, assists other departments in designing computer labs, makes recommendations on software and hardware options for other departments, and develops in-house software applications for use by the CCF operational staff. Netops also coordinates with Material Services to accomplish evergreening initiatives, during which one third of all computer lab hardware is replaced annually. Retired machines are allocated to other departments and schools to alleviate their computing costs and needs. Additionally, Netops is responsible for maintaining network connections in over 60 smart classrooms on the New Brunswick/Piscataway campus.

Netops also manages RUWireless and RUWired. These services provide the Rutgers University community with wireless and wired network access in several areas of the New Brunswick/Piscataway campus. All Rutgers University students, faculty, and staff, as well as sponsored guests, are able to use the RUWireless and RUWired systems in the many community spaces and departmental buildings. A valid NetID and password are needed for access, and separate registration is not required. RUWireless and RUWired deployments are also available to departments as a contracted service. Expansion in these services over the last 2 years is due to departmental purchases.

The CCF Support group is responsible for administrative duties that affect all CCF labs. This includes maintaining and reporting lab usage statistics, maintaining personnel and payroll records, preparing information for new hires, preparing and distributing lab access schedules, and maintaining CCF websites.

CCF has been consulted for its recommendations on how to allocate funding supported by the Student Computing Fee for the last 10 years. This includes involvement at the University Senate and state levels.

Pharos Uniprint

In the spring of 2005, CCF successfully implemented Pharos Uniprint, a print management program that tracks user printing and controls print jobs in the computer labs. As users print their jobs from their computer lab work stations, the program tracks their jobs. When users are ready to print their jobs, they must swipe their RU Connection cards at a release station located next to the lab printers. The release station displays all jobs specific to that user, and the users select which print job they want to print. Users can also cancel print jobs that they do not wish to print. If a user does not release their print job from the print release station to the printer within 45 minutes, the print job is automatically deleted.

Pharos Uniprint was developed by Pharos Systems International. Several customizations were made to the program to allow it to work in the Rutgers computer lab environment. In order for users to be able to use their RU Connection cards to release their print jobs, John Hindle of Netops developed a plug-in that maps the RUID encoded in the RU Connection card to the student's NetID using LDAP. Additionally, John developed a print reporting web page that allows easy viewing and sorting of print jobs by how many jobs were printed by each printer, each user, each campus, and the top users in a given period of time.

Please see Appendix 2 (page 75) for CCF printing statistics.

Wireless Services Presented at Educause

Kenneth LeCompte and Aaron Richton of CCF's Netops group gave two presentations at the January 2005 Educause conference about Rutgers' deployment of wireless services and the challenges involved in this effort. The first presentation was a corporate presentation given by Ken and employees from Bluesocket describing the wireless implementation at Rutgers University. Approximately 20 conference participants attended this presentation. The second presentation was a poster session conducted by Ken and Aaron about a utility they created to perform wireless site surveys. The poster session was very well received; it was scheduled for one hour, but Ken and Aaron stay for an additional 45 minutes to answer all the questions the attendees asked. A handful of attendees contacted Ken and Aaron after the conference for additional information and advice about wireless. Bluesocket was also very happy with the presentations.

RUWireless and RUWired

CCF Netops expanded RUWireless and RUWired coverage on the Rutgers, New Brunswick/Piscataway campus to eight new locations: Brett Hall, Werblin Recreation Center, Foran Hall, Music Library, NJ Hall, Van Dyck Hall, the Busch Campus Center (RUWired), and the Rutgers Student Center (RUWired). CCF Netops continues to design and build custom wireless access points for greater coverage, control, and traffic throughput.

Student Employee of the Year 2005 Top Ten Finalist

Michael Mahoney, student Lab Supervisor at the Livingston Computing Center, was named one of the top ten Student Employees of the Year by the Rutgers University Student Employment Office. In April 2005, his achievements were celebrated in an award ceremony presented by the Student Employment Office. Michael was nominated by his managers, Melissa Malana and Cody Burke.

Summer Upgrades of CCF Labs

CCF replaces approximately one-third of all lab equipment every year, keeping each piece of equipment in rotation for a maximum of three years. A majority of software upgrades also takes place during the summer. These upgrades allow CCF to keep current with recent changes in technology and in line with user demands. CCF maintains a total of 918 ICI workstations and 46 printers at all sites.

In addition to technical training, the session covers general staff regulations and customer service. The Formal Training sessions are taught by full time managers and student supervisors at each of the four CCF campus locations on four dates during the summer.

During the summer of 2005, Formal Training was completed by 204 CCF student staff and an additional 37 student staff from the other NBCS groups. The sessions were designed by student

CCF Summer 2005 Upgrades

Hardware	Software	Servers
○ 190 PCs purchased ○ 76 Macintoshes purchased ○ 15 Xerox 5500N laster printers purchased ○ 5 Xerox 6350/DP laser printers purchased ○ # Dell 2300MP projectors purchased ○ # Sharp M20X projectors purchased ○ Delivered approximately 250 workstations to Material Services for distribution to departments	○ PCs upgraded to Windows XP ○ New versions of MS Office, SAS, Maple, SPSS on all PCs ○ Firefox, ChemDraw added to all PCs ○ Macintoshes upgraded to MacOS 10.4.3 ○ New versions of MS Office, iLife, Maple on all Macintoshes ○ Firefox added to all Macintoshes	○ Upgraded all servers to Windows 2003 ○ Replaced 5 servers with Dell PowerEdge 2850s

Student Staff Training Program

Since student employees are essential to CCF's operation and success, CCF is committed to investing in student staff through an extensive training program. Full time managers and part time student supervisors dedicate much time and effort to designing and administering the program, which is currently in its eighth year.

CCF consultants are required to attend several training sessions: Formal Training, One-on-One Training, Site-Specific Training, and Customer Service Training. A Continual Training program and a newly introduced Leadership Development Series are also available to provide staff with more specialized training in a wide array of topics.

Formal Training

Formal Training is a rigorous 8-hour session that is required for all new consultants and wait-listed CCF staff. Staff is trained to support and troubleshoot Macintosh, UNIX, and Microsoft Windows issues that may arise in the CCF labs.

supervisors under the advisement of full time managers.

One-on-One Training

One-on-One Training is a 6-hour hands-on training that is required for all hired CCF staff. The training is also offered to CCF waitlisted staff as well as staff from the Help Desk, ResNet, and Operations.

The sessions are designed to familiarize new employees with the facilities in which they will work, to teach them the procedures to follow on the job, and to introduce them to other lab staff. Staff members receive hands-on experience in diagnosing and troubleshooting various software and hardware issues. Most importantly, the training provides the first opportunity to assist lab patrons in a real work environment.

During the summer of 2005, 1-on-1 training was completed by 153 CCF student staff and an additional 25 student staff from other NBCS groups.

<u>Site-Specific Training</u>
Site-Specific Training sessions were offered at each of the CCF computing centers at the beginning of each semester. These required sessions are designed to train student staff on campus-specific procedures and to relay any changes made in lab facilities, policy, hardware, and software since the previous semester.

<u>Customer Service Training</u>
Customer Service Training is required of all newly hired CCF consultants. The sessions train consultants on the NBCS service focus, highlighting issues that may be encountered in the CCF computing centers. The interactive session is based on the Disney methodologies for Service Excellence and the Charthouse Learning FISH! philosophy. 120 new consultants attended five sessions that were offered in the fall and spring.

<u>Continual Training Program</u>
CCF offers its student staff opportunities for further professional development through a continual training program. Classes are taught throughout the semester on topics such as customer service, software, operating systems, and networking. To be eligible for a payraise, consultants must attend 12 hours of continual training per academic year.

CCF Continual Training Classes	
Fall 2005	**Spring 2006**
Advanced OSX	Advanced Networking
Basic Video Editing	Advanced Stress Management
Bit, Bytes, and Binary [T]	Advanced Video Editing
Introduction to Adobe Illustrator	Assertiveness in the Labs
Introduction to Adobe Photoshop	Basic Video Editing
Introduction to Excel	Bit, Bytes, and Binary [T]
Introduction to MacOSX	iLife Tools
Introduction to Networking	Intermediate OSX
Introduction to PowerPoint	Introduction to Adobe Illustrator
Introduction to SQL [T]	Introduction to Networking
Media and Transmission	Introduction to OSX
Stress Management	Introduction to PowerPoint
Understanding Virtual Private Networks	
UNIX for Consultants	
[T] *Online Tutorial*	

<u>Leadership Development Series for Student Supervisors</u>
CCF has always been dedicated to developing its staff and providing staff members with the tools they need to successfully support the labs and lab patrons, as well as helping the staff learn many skills that will help them long after they have moved on into the "real world". As staff members move up the ranks and earn increased recognition and responsibilities, a need arose to develop opportunities for growth specifically geared toward student supervisors. In that vein, the Leadership Development Series was initiated, headed by Assistant Manager Mostafa Khalifa.

The program affords student supervisors the opportunity to work with other campuses and to increase leadership and interpersonal skills. Student supervisors learn from experienced, trained leaders and managers, and build on each other's knowledge and experience. Five or more sessions are offered each year. So far, two sessions were offered; both were well received and attended.

In late July, the first seminar, "The Laws of Leadership," was taught by Mostafa. Student supervisors learned essential concepts of leadership, including important skills such as planning, setting goals, connecting with and relating to staff, and applying these skills in their roles as leaders and supervisors.

The series continued with its second installment in August, "Training the Trainer," taught by Assistant Manager Patrick Douglas. This engaging seminar covered topics such as lesson planning, class objectives, laws of learning, media methods, handling difficult behaviors, and working effectively with co-trainers. This is useful for the CCF staff members, who conduct training sessions throughout the year.

In January 2006, the third installment of the Leadership Development series for student supervisors, "The Levels of Leadership Workshop" was taught by Mostafa. Student supervisors participated in an activity in which they had to use leadership skills to plan a

hypothetical employee appreciation picnic. The exercise included budget planning, marketing strategies, and other event planning considerations, such as selecting a location, catering, and entertainment. Staff applied their skills in a team-environment, working through challenges and obstacles to come to a consensus within their groups.

Student Staff Recognition Program
The CCF Recognition program for student staff was successfully administered for the sixth consecutive year. CCF also expanded the student recognition program by implementing a prize raffle based on meritorious service.

Merit Raffle
To manage its large staff, CCF employs a system in which consultants can earn merits for good work performance and exceptional service. To encourage employees to earn merits, a system was implemented in the fall of 2005 in which each merit is equivalent to one chance in a monthly raffle. One prize is awarded to one consultant per campus each month. To date, the program has been well received.

Service Excellence Awards
CCF has been recognizing exceptional student workers for several years through the Consultant of the Month, Consultant of the Semester, and Supervisor of the Semester awards. CCF believes it is important to acknowledge and encourage good work. Those chosen for these awards have distinguished themselves by providing outstanding customer service, having extensive knowledge of lab hardware and software, maintaining good working relationships with co-workers, and by handling job responsibilities in a professional manner.

Consultant Review Program
For several years, CCF has been evaluating the job performance of its consultant staff in order to provide excellent customer service to lab patrons and to aid staff members in developing their skills. This fall, a new process for evaluating student consultants was implemented. CCF employs over 200 consultants, making staff evaluations logistically challenging. The previous system was perceived by managers and supervisors to be overly time-consuming and labor-intensive.

The current process is less rigid and encourages a mentoring relationship with consultants. A member of the management staff meets with a consultant three times each semester to discuss the consultant's performance and any issues pertaining to the labs. Consultants are encouraged to communicate any work-related problems, questions, suggestions, or comments. Feedback on this process has been exceptional. Both consultants and supervisors agree that this process improved relationships, allows for more open lines of communication, and resulted in a more productive use of time.

In its inaugural year, the Consultant Review Program has received positive feedback from consultants during year-end reviews. In the spring of 2006, a technical evaluation was completed by all CCF consultants. The technical evaluation is an online quiz all CCF consultants are required to take. The evaluation was designed by student supervisors and managers, based on hardware and software found in the CCF labs. It is used to measure each consultant's technical aptitude.

Busch Campus Computing Center Renovations
The DML (Digital Media Lab), consultant station, and staff offices at the Busch Computing Center in ARC (the Allison Road Classroom Building) underwent much needed renovations this year. The DML was relocated within the computing center, and the number of computers was reduced from 18 to 4 (2 Macintosh and 2 Dell workstations). Changes in technology over the years allowed CCF to consolidate computers. All four DML computers are capable of video editing, 3-D rendering, and multi-media use. One Macintosh and one Dell workstation are capable of slide scanning. Scanners that were previously located in the DML were moved into the general access areas of the lab. This renovation allows for increased hours of availability at the DML and is a better use of the space available in the Busch Computing Center.

The Supervisor/Assistant Manager office was relocated to the former DML space. Separate office space was created for the supervisors and the Assistant Manager, allowing for private workspace. A reception area was created for lab patron support, and a meeting room was added for staff meetings. CCF Support was also relocated to this office from Hill Center, allowing for closer supervision of staff and better communication with the CCF Support Manager, whose office is located in ARC. This renovation

resulted in a much-needed increase in workspace and a more professional environment.

The Busch Campus Computing Center consultant station is the main point of contact for patrons at the lab. Four consultants are normally on duty, but the old consultant station only accommodated three. The consultant station was expanded to accommodate five workstations, making room for all consultants on duty, plus one supervisor. This is a better use of available workspace and provides all staff on duty with the proper tools to assist lab patrons.

Participation in University "Green" Initiatives

CCF Participated in testing paper for the University Request for Proposal for 30% recycled paper. Testing was conducted the week of December 5, 2005 over a four-day period at the Busch Campus Computing Center. Five cases of Aspen 30% recycled paper were tested. Paper jams and the amount of paper dust in the printer were tracked, and observations of the overall appearance of the paper were noted. There was no performance difference between the Aspen brand paper and the recycled paper in use at the time of testing.

Hill Center Security System

CCF is currently testing a new security system using RUConnection cards at CCF's Hill Center offices. CCF hopes to deploy this system at other CCF locations to allow for easier management of security of CCF facilities.

Customer Satisfaction Survey

CCF conducted a Customer Satisfaction Survey the gauge the quality of services offered by the group. The survey was based on previous surveys, but significantly modified in order to gather information that is more useful. 2,755 submissions were submitted over a three-week period from April 3, 2006 to April 25, 2006.

This was the first year the CCF survey was conducted online. Previously, paper surveys were distributed to lab users by consultants. Conducting the survey online proved to be more efficient; paper was conserved and staff was able to focus on helping lab users, rather than handing out surveys. Phpsurveyor was used to publish the survey, and to collect and analyze responses. The survey was advertised on the CCF website and via signs posted in the labs. There were two

versions of signs, one for workstation monitors and a letter-sized sign posted throughout the labs.

CCF patrons are consistently happy with the service and technology available to them at the computer labs.
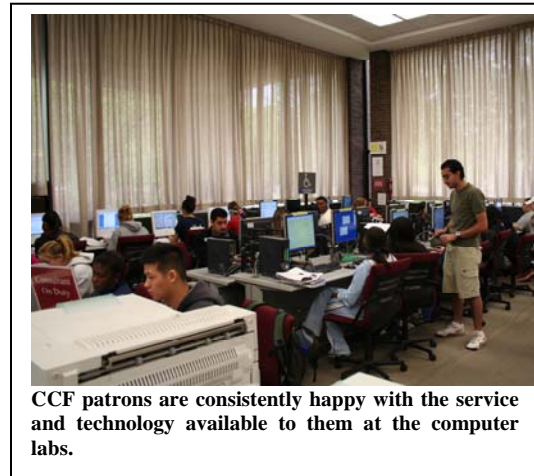
Please see Appendix 1 (page 71) for the results of the customer satisfaction survey.

Eden Guest Account Creation for UMDNJ

CCF created over 120 Eden guest accounts for UMDNJ joint program students. This allowed students in these joint programs to have access to computing services available to typical Rutgers students, including use of CCF computing labs, email, ResNet access, and online library privileges.

College Avenue Office Renovations

The College Avenue Computing Center management offices were renovated in the fall 2005 semester. Staff workspaces were orientated to increase staff approachability and improve customer service. Installation of stylish and functional furniture increased storage and power management. The offices were painted and new carpeting was installed. CCF continues to look for ways to maximize available resources and to provide a better customer experience.

Alexander Library Undergraduate Computing Lab on College Avenue

The Alexander Library Undergraduate Computing Lab opened in February, 2006. The lab is located in the Undergraduate Reading room of the Alexander Library, has been popular with students since its opening, and is gaining momentum: it may prove to be the busiest of all the library sites. The lab is comprised of 22 PCs, 4 Macintoshes, and 2 Xerox 5500 printers. CCF

Alexander Library Undergraduate Computing Lab

College Avenue Campus staff worked diligently to staff the new lab during the middle of the busy spring semester.

The addition of the new lab was favorably cited in the Daily Targum on March 23, 2006. Targum staff interviewed CCF Associate Director Wayne Higgins and library staff in the article. Harry Glazer, communications coordinator for University Libraries Administration, was quoted as noting, "We've always seen it as a priority to work with the Office of Information Technology to make resources like this possible. They are very forward thinking in terms of giving students what they need to do their work."

RUWireless/RUWired
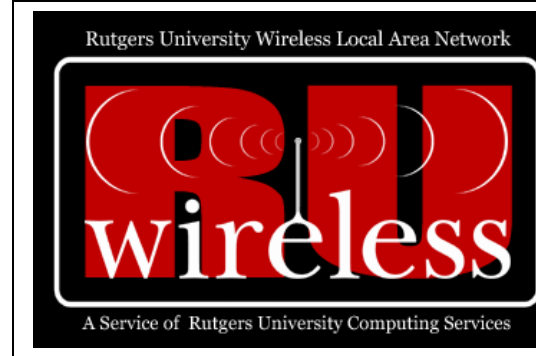
To accommodate the increasing demand for installations throughout the University, RUWired/RUWireless was added as an internal vendor in RIAS. This allows clients to make payments more easily and allows for more efficient processing of the administrative details associated with new installations.

Please see the chart below for expanded RUWireless and RUWired coverage, and Appendix 4 (page 78) for RUWireless statistics.

Installation of SSL Certificate for the RUWireless Main Login Page

An SSL certificate was installed on the main RUWireless login page to increase the services available to RUWireless users. This security measure makes it more difficult for malicious

CCF Netops expanded RUWireless and RUWired coverage to many locations during the 2005-2006 Fiscal Year.		
RUWired and RUWireless	**RUWireless only**	**RUWired only**
Campbell Hall	303 George Street (GSE facility)	Student Activities Center
Cook/Dougalss Temporary Classroom Bldg.	ASB II (UHR)	Milledoler Hall
Frelinghuysen Hall	Asian American Cultural Center	Bishop House
Murray Hall	Cooper Dining Hall	Hill Center 114 & 116
Loree Building Lecture Halls	Ceramics Research	Lucy Stone Hall
Hardenbergh Hall	Brower Commons (dining area)	Scott Hall
Livingston Temporary Classroom Bldg.	Busch Dining Hall	SERC
Sonny Werblin Recreation Center	Expanded Engineering coverage (B & D wings)	
Wright-Rieman Labs	Fiber Optic Materials Research	
	MGSA Visual Arts Building (Livingston)	
	Milledoler Hall	
	Public Safety	
	SCILS	
	SCILS Annex	
	Simeon De Witt Building	
	Tillett Hall (dining area)	
	Van Dyck Hall	

users to spoof RUWireless. The installation was efficiently performed with one certificate for the entire cluster of servers rather than with one certificate for each of the 20 servers. The resulting savings is $3,000.00 per year.

Transition to New Blue Secure Access Points

RUWireless is being transitioned to BlueSocket's new BlueSecure Access points. These are affordable, centrally managed, thin access points that provide 802.11 a/b/g connectivity and simplify deployment, maintenance, and troubleshooting. These modules have been installed in a number of high-use areas. All remaining access points will be upgraded over the summer of 2006. CCF also designed custom security enclosures to house the access points.

BlueSecure Access Point Monitoring Added To Nagios

CCF worked with Central Systems and Services to add BlueSecure access point monitoring to Nagios to allow all new RUWireless equipment to be tracked. This new service interfaces between the proprietary BlueSecure access points and the open protocols supported by standard monitoring software. Alerts relating to degradation of the BlueSecure access points deployed as part of the RUWireless infrastructure can now be disseminated through multiple channels, including automated alerts and web-based systems monitored by other NBCS groups.

Wireless Printing

CCF enabled wireless printing in March, 2006 to expand offered services by CCF. This service is now available for the Windows 2000/XP and MacOSX operating systems, enabling users to print from any RUWireless location to any CCF computer lab. The service has been well received. Wayne Higgins was interviewed about the new service by the Daily Targum, which featured a favorable article covering wireless printing. This service was in the planning phase since spring 2005. With this service, CCF leads OIT in implementing the wireless initiatives proposed in the OIT Strategic Plan Draft.

DMCA Reports Policy

CCF developed a procedure in response to DMCA (Digital Millennium Copyright Act) takedown notices from IPS (Information Protection and Security) or directly from the MPAA (Motion Picture Association of America) or the RIAA (Recording Industry Association of America). When CCF receives a report, the group attempts to validate the report by tracking down the NetID of the user in question. If validated, a letter is sent to the user and IPS. CCF requires users to acknowledge the letter. If users do not respond, they lose access to the network and risk further disciplinary action. While CCF cannot check the user's system directly, they advise users to cease sharing any copyrighted material. There have not been many of these types of reports, nor any repeat offenders or escalated cases.

RUNet2000 Transitions

After running for several years on the legacy network, the Satellite Computer Lab on the College Avenue Campus was transitioned to RUNet 2000 in November, 2005. CCF's largest computing centers, the Busch Campus Computing Center and the College Avenue Computing Center, transitioned to RUNET 2000 over Spring Break 2006. The transitions resulted in an increased uplink speed from 10Mbps to 1 Gigabit.

Printing Vendor

Printer Consumables Planning and Vendor Relationships

After significant research and negotiation, CCF ended its relationship with local vendor LaserSpeed as the toner vendor for the high volume needs of the CCF computer labs. CCF investigated other options and selected the Rutgers University Computer Store as their new toner vendor. The Computer Store provides fair pricing and the best possible service to the labs. It keeps a sizable inventory on campus for the labs' immediate needs, removes all used consumables from the labs for recycling, and shifts the responsibility of finding suppliers away from labs. CCF has been very satisfied with this relationship.

Xerox Support Certification

Brian Luper and Randall Newman of CCF Netops became certified to repair a number of Xerox printers, including 5500, N4525, M20, and 6300/6350 printers. This enables Netops to respond to printer issues faster than third party vendors. Most issues are now resolved within 24 hours of notification, whereas previous repairs often took a week or longer. Additionally, these certifications have been a

cost-saving measure because CCF is able to recoup some printing expense by servicing printers internally.

Programming Projects
CCF Wiki
CCF Netops modified and installed Bitweaver, a wiki/content management software, for maintaining internal documentation. The installation required significant modification to meet the needs of CCF. This tool will allow staff to easily update webpages and more efficiently share information on the web.

Online Shift Scheduler
CCF has used an online administrative tool known as the Shift Scheduler for 10 years to create consultant schedules for staffing the computing centers. In recent years, the NBCS Help Desk also used this tool. The Shift Scheduler allows managers to efficiently schedule hundreds of consultants at 15 computer labs and the Help Desk.
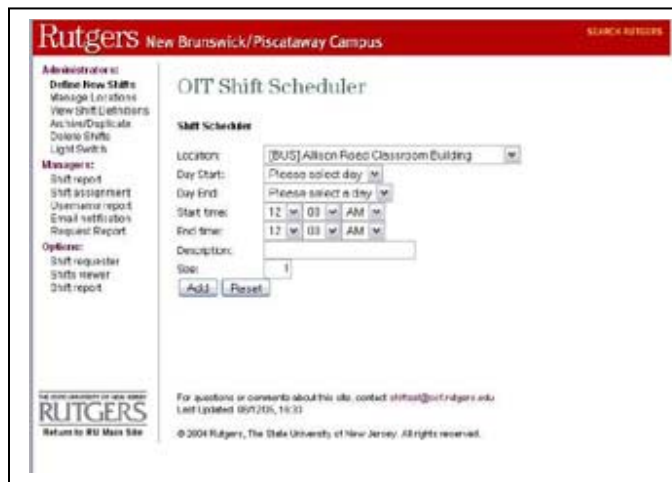
During the fall 2005 semester, CCF Netops redeveloped the application, improving its functionality and interface. Several rounds of testing were conducted by CCF and the NBCS Help Desk. After a successful first deployment, the groups compiled requests for additional features for the next version of the Scheduler. Feedback about the tool was very positive. The favorable reviews of the application have prompted Rutgers-Camden to ask to review the Shift Scheduler for possible use on the Camden Campus.

During the spring 2006 semester, all requested features made since the first deployment of the Shift Scheduler were implemented.

Governor's School Assistance
CCF once again assisted the Governor's School of Engineering and Technology by loaning the program approximately 30 workstations. The program offers a summer enrichment curriculum to 100 of New Jersey's top scholars in the fields of engineering and technology. The students participate in various courses and projects designed to improve their leadership, communication, problem solving, and team building skills. Computer access was provided in order to offer a comprehensive experience to the students. A special image was created for these machines, which were delivered to the dorms being used by the school.

RUWireless/RUWired

RUWireless/RUWired plans to continue expanding and upgrading the services it offers as time and funding permits. One of the important goals for the upcoming year is to secure University funding to continue to support and expand RUWireless. With initial engineering completed and the backend sized for the foreseeable future, CCF is uniquely positioned to respond to the OIT Strategic Plan (Draft) and customer survey results calling for an increase in wireless availability. RUWireless can deliver this service rapidly and economically in direct response to available funding.

RUWireless/RUWired also plans to pursue a number of upgrades to current hardware and services. All wireless access points will be replaced with new BlueSecure access points. A secondary BlueSecure cluster will be added on the College Avenue Campus to improve reliability, distribute load, and serve as a failover if Hill Center is unreachable. Lastly, remaining legacy smart classrooms will be transitioned to RUWired and additional ports will be added, as building networking permits.

Summer Lab Upgrades, 2006

CCF Netops is currently planning workstation configurations for the annual upgrades that take place over the summer. The group is working closely with the Computer Store as well as Newark and Camden labs to enable CCF to leverage its buying power and obtain the best price. CCF is also evaluating a number of printers from HP, Xerox, Lexmark, and IBM to determine the best balance of cost, speed and reliability.

Four hundred workstation and eleven printers will be replaced during the summer of 2006. It is expected that several software packages, including the Adobe Creative Suite 3, will be upgraded if new versions are available. Anti-virus software and class software such as SPSS and Maples will also be upgraded.. CCF Netops will also work with Material Services to distribute retired machines to other departments and schools to alleviate their computing costs and needs.

Research and Development – Dual Boot Lab Machine Image

CCF is currently investigating the possibility of a dual boot lab image to run on the new Intel iMacs that will be installed in the labs this summer. This would allow Mac OS X and Windows XP operating systems to run on a single machine, thereby expanding lab offerings considerably. This would cost $400 over a single-operating system PC, but may prove cost effective for small labs.

Printing in the CCF Labs

CCF has encountered numerous challenges in meeting the printing demand at the computer labs. Since Fiscal Year 2000, printing demand steadily increased. During this same time, there was no corresponding increase in funding. Additionally, high printer use caused printer failure and jamming.

CCF is currently investigating ways to lower printing costs in the computer labs. To this end, the group is looking into printer models capable of duplex printing. CCF is also performing preliminary testing of a quota and billing system. If implemented, printing quotas and billing policies may result in reduced printing and recouped printing costs.

Install New DHCP/LDAP Servers in Labs

CCF will install new DHCP servers in the labs to replace the current boot servers. This will provide increased options for student staff to repair machines and for CCF staff to deploy updates. The new DHCP service will be backed up by an LDAP dataset so changes will take effect immediately. Currently, changes are propagated by a script, and a typo in the propagated configuration may interfere with a lab's operation. A web tool will allow routine maintenance (such as motherboard replacements) to be authorized to the network by authorized student staff, freeing up staff resources for a routine operation.

One of the goals central to this upgrade is the implementation of bandwidth monitoring for the labs. This will reduce congestion on the University Internet handoff as well as the local lab and building networks. If policy is approved, CCF may also be able to take disciplinary action

against individual offenders (such as Internet access privilege cutoff), bringing the CCF labs in line with other services such as RUWireless, ResNet, and TD top talkers. This also allows a class of cutoff that may stop an abusive user from interacting outside of the University while not cutting them off from essential coursework, such as an IML-based class. The bandwidth accounting boxes will also have offsite redundancy in the event that Hill Center is unreachable due to planned or unplanned outages.

Application Programming

CCF Netops will develop new software applications to support the business practices of the CCF labs, the CCF Netops group, the Help Desk, ResNet, and NBCS Operations. Existing applications, such as HATS (Hiring and Application Tracking System) and the Shift Scheduler, will be updated with new features. Several legacy applications will also be migrated from an outmoded server.

Another project slated for the upcoming year is a rewrite of a tool used to manage consultant shift schedules known as the coverage page. This web application allows consultants to request coverage for shifts and, conversely, to pick up shifts being offered for coverage. Email notifications are sent to lab management, the consultant who posted the shift, and the consultant covering the shift.

The online shift scheduler needs to be integrated with other administrative tools and processes used in creating and managing student staff schedules. CCF is waiting for further programming work that will integrate shift coverage, temporary schedules, and supervisor schedules into this application. Additionally, more features are planned to further enhance the shift requester.

IML Usage

IML (Instructional Microcomputer Lab) usage continues to be in high demand. Departments, courses, and special programs make numerous requests each semester for reservations in these instructional facilities. IML usage presents a number of challenges for CCF, particularly because of increasing usage and limited space in all labs. Reservations are often requested for the busiest times of the day, when general lab usage is high. Anytime an IML is in use by an instructor, the classroom is closed to users who

are using the computer lab for personal computing. Additionally, reservation requests often conflict with each other. Every effort is made to find appropriate classroom space for requestors, but at times, it is impossible to accommodate all requests.

CCF Instructional Microcomputer Lab, Livingston Computing Center

CCF will continue make every effort to accommodate IML requests, as this greatly benefits instructors who require teaching facilities equipped with updated computers. In an effort to develop more services offered to students, several labs are developing a plan to offer IML space to student study groups during evening usage and other times when usage is not at its peak.

Please see Appendix 3 (page 77) for IML usage statistics.

Leadership Development Series

CCF plans to develop new seminars for the coming year for the Leadership Development series in conjunction with other CCF managers, and to refine and re-teach existing seminars to new supervisors on staff. Possible new topics for coming year include Handling Feedback in a Customer Service Environment, Management Styles, and Public Speaking.

Consultant Review Program

CCF managers plan to work with student supervisors to assess whether the number of reviews in the consultant review was adequate. They will review and update the technical evaluation questions, and work on the timing of Consultant Review Meetings. They also plan to create a suggested timeline for campuses to follow. This year, completing the three required number of meetings during the busy hiring period was a challenge for lab management.

Additionally, management wants to be able to assure all eligible consultants ample time to retake the technical evaluation if they did not do well the first time they took the evaluation.

Continual Training Program

Consultants noted that it was difficult to take the suggested number of continual training courses during the semester because of scheduling issues. To address this concern, CCF plans to increase the number of online tutorials available for consultants to take next year. Additionally, more classes will be scheduled during evenings and weekends to make classes more accessible to consultants.

Background

Ed Humphrey
Assoc. Director

The mission of CSS (Central Systems and Services) is to facilitate and enhance the ability of members of Rutgers University to create, access, share, and manipulate electronic information in a timely and reliable manner using cost effective hardware, software, network, and process solutions.

CSS provides central computing systems and services primarily to the New Brunswick and Piscataway campuses of Rutgers University. The group also provides central services to the Newark and Camden campuses. Users of CSS services are New Brunswick and Piscataway campus students, faculty, and staff, and some guests of the University. CSS offers a broad variety of commonly used network services, implemented in full-featured, highly available, and scalable architectures. These services are similar to services offered by commercial ISPs: distributed services for individual users, including IMAP accounts and email lists, Apache/MySQL/PHP service, Jabber accounts, and Shell accounts; distributed services for departments, including all individuals' services with departmental identity, disaster recovery, monitoring, account management, directory service, authentication, top-tier support for departments who run their own UNIX servers, and customized chargeable services; and web client software for all of CSS's services.

The Central Systems and Services team (and friends).

Webmail Upgrades

CSS upgraded the eden and rci webmail programs. Upgrades to these systems include: spell checking and dictionary features, address book importing and exporting, a mail folder restoring feature, mail archival, language translation of incoming email, and a weather tool using weather.com.

New and Upgraded Webtools

Webtools, an online resource available to Rutgers users, was upgraded to offer enhanced ability to track the utilization of file space quotas within the webmail interface. CSS also improved the support offered for departmental features, such as establishing and managing departmental accounts.

Eden Web Tools

RU Home | NBP Home | NBCS | Eden Main

The following tools allow you to manage your Eden account with a web browser:

Mail Tools

All mail tools are now accessed through the SquirrelMail webmail program.

After logging into SquirrelMail, click on the Webtools link to find tools for:

- Forward: Basic email forwarding
- Vacation Message: Automatic replier for incoming emails
- Spam: Filter unwanted email
- SquirrelMail: Check email through your browser
- IMAP Convert: Convert old mail files to new (maildir) format

Account/File Tools

- Quota: Display a user's file system disk quota and usage
- File Manager: Weeble web-based file manager
- Create an Eden account
- Change your Eden password (assumes you know your current password)
- Unlock a kerbshelled (locked) Eden account
- Change your finger information
- Change your Unix login shell
- Samba: create, enable, disable samba account

CSS's webtools.

Regular Systems Maintenance

CSS successfully completed regular, planned maintenance of all central services resulting in virtually no unplanned downtime during the spring 2005 semester. Regularly planned hardware upgrades were all completed on or ahead of schedule, with minimal planned downtime and no unplanned service outages. Additionally, CSS executed regular account life cycle management processes, including account deletions and account cleanup. Several data management activities resulted in standardization and clarification of enterprise data used in the account management process.

CSS provided ongoing second and third level support for various University-wide services, including RATS (Rutgers Accounts Tools and Services), RAMS (Rutgers Automated Mass-Mailing System), SSL certificates, and UNIX Operating System Administration consultation and problem resolution.

Data Backup System

The backup system used to back up all CSS data was completely re-engineered to employ a tapeless solution, using a highly scalable, redundant, and reliable Network Appliances based infrastructure. The solution is fully automated and includes a web based end-user tool for file restoring. Software supporting mail delivery to the University was upgraded to greatly improve reliability and performance.

Mailman

During the spring 2005 semester, CSS completed preliminary research and testing of Mailman, an open-source tool to replace ListServ. The Mailman tool will significantly improve the performance of the web-based user interface, process messages more efficiently, and improve systems management and administration capabilities. Mailman uses a scalable architecture to handle the anticipated increase in service usage.

Jabber

CSS completed development and systems administration work to deploy a beta version of the Rutgers Secure Instant Messaging solution, based on Jabber. The group initiated a project team that continues the trial and use of the tool locally.

Nagios

System monitoring utilizing the NAGIOS tool was enhanced to provide broader service specific status. CSS initiated work to upgrade Nagios to Release 2.0.

Infrastructure Upgrade

CSS completed a significant upgrade of the processing infrastructure by incorporating 2 Foundry GTs Layer 4 switch devices and two new Network Appliance network attached storage (NAS) devices. The addition of this technology allows CSS to do more effective and dynamic load balancing of processing across its platform, as well as giving Rutgers significant availability and reliability of the platform due to clustered failover capabilities. Hardware failures are instantly adjusted to, resulting in continuous service availability. The automatic load balancing ensures optimal resource utilization for best possible service performance.

AntiVirus/Spam Processing for Eden

CSS successfully completed a design of the AntiVirus/Spam processing for the Eden platform that optimizes the use of the infrastructure to more effectively and efficiently handle the AntiVirus/Spam filtering and tagging function.

Departmental Workstation Upgrade and Deployment

To improve the efficiency of providing technical support to the suite of CSS, the team migrated from Solaris to Linux workstations. This effort included the development and adoption of automated Linux installations implemented with System Imager. The team successfully completed the first production Linux server deployments.

SCILS Transition

CSS completed a multi-year project to move the Rutgers University School of Communication Information and Library Studies (SCILS) to the Research Computing Initiative (RCI) infrastructure for email and other common services. The team also completed the migration of Chemistry BioMAPs to RCI.

SSN to RUID Conversion

CSS successfully designed, developed, and implemented applications and infrastructure enhancements to support enforcement of data privacy and ID Theft Prevention requirements, specifically related to Social Security Numbers. Changes to the RAMS and RATS applications included support for newly expanded agreements with ESS over PDB data structure, ownership, and usage.

RAMS Updates

CSS successfully designed, developed, prototyped, and implemented significant changes to the Rutgers Automated Mass-Mailing System (RAMS). Over two releases, RAMS was enhanced to provide SPAM filtering as well as significant user-driven enhancements to the web-based interface for look and feel, as well as features and functionality to improve the usefulness of the application. CSS incorporated database server hardware into the second release this fall.

RAMS Lists	
Class RAMS lists	
Total Messages	23,074
Average Message Size	70.81 KBs
Total Message Size	74,582.39 MBs
Average Number of Recipients	42.29
Total Number of Recipients	975,773
Rutgers Official RAMS lists	
Total Messages	10,665
Average Message Size	47.73 KBs
Total Message Size	411,041.43 MBs
Average Number of Recipients	1,228.47
Total Number of Recipients	13,101,683

Network File System

CSS tested and installed the new release of the Network Appliances DataONTAP 7.0 operating system. This effort included extensive testing, bug identifications and resolution, and obtaining vendor commitments to improve the testing and stability of initial operating system releases.

CCS also increased the storage capacity for the data recovery by adding 8 terabytes of storage, for a total of 24 terabytes for files storage.

RCI Upgrade

CSS completed a major component of the RCI platform upgrade by installing and configuring new Sun Microsystems v20 servers to support IMAP for email services.

CSS Server Counts	
Eden Machines	**50**
Production Machines	**43**
Development Servers	**7**
RCI Machines	**45**
Production Machines	**42**
Development Servers	**3**
Other Production Servers	**15**
Other Development Servers	**25**

Account and Systems Maintenance

CSS successfully completed regular, planned maintenance of all central services resulting in virtually no unplanned downtime. All normally planned hardware upgrades were completed on or ahead of schedule, with minimal planned downtime and no unplanned service outages. This includes rack and power acquisitions, placement, and setup. The efficiency of system installations was significantly improved with the use of System Imager for CSS's Linux machines and Flar for Solaris machines. The group also executed regular account life cycle management processes, including account deletions and cleanup.

CSS provided ongoing Level 2 and 3 support for various University wide services, including RATS (Rutgers Accounts Tools and Services), RAMS (Rutgers Automated Mass-Mailing System), SSL certificates, and UNIX Operating System Administration consultation and problem resolution. Additional Level 2 and 3 responsibilities included more involvement with the development of general user announcements and documentation, as well as ongoing development and delegation of system and user policies.

Continued work on the CSS Backup System (Disaster Recovery Storage Service) has given CSS the opportunity to extend this service to other groups and departments.

Webmail Upgrades

Upgrades to the webmail program include improved address book functionality, and increased spam filtering with the introduction of Bayesian filters. The Bayesian filters are currently in testing.

CSS's student server (eden.rutgers.edu) home page.

RCI

CSS looks forward to migrating more groups and departments to the RCI (Research Computing Initiative) infrastructure for email and other common services in the next Fiscal Year.

Ongoing Support

The group will continue to improve the services it provides with ongoing hardware upgrades during the summer of 2006. Upgrades include network hardware upgrades for existing Layer 4 and Layer 2 switches, and network appliance upgrades to meet the increasing demands of the user community.

RAMS Upgrade

CSS plans a full upgrade of the RAMS infrastructure, including hardware and the operating system upgrades. The hardware will be upgraded to Sun V240 servers, and the operating system will be upgraded from Solaris 9 to Linux.

Hill Center Machine Room Repairs and Upgrades

The Life-Safety systems, primarily the sprinkler system, in the Hill Center machine room need to be repaired or upgraded. This project requires coordinating Facilities and Maintenance Services. Additionally, the pre-action and CO2 systems need to be upgraded.

CSS also plans to upgrade the access security system for the Hill Center machine room. This project will entail key card access as well as monitoring access to that location.

NFS Upgrade

CSS will upgrade the NFS (Network File Server) file storage infrastructure in the coming year. This upgrade will include new file servers (Network Appliance file servers) and additional storage capacity. This upgrade will improve NFS performance and availability.

RULink

CSS currently provides operations and system administration for the RULink infrastructure, including servers, maintenance, and software licenses. In the near future, the group will also assume responsibility for application support. This includes maintaining application support, updating software patches, and tier 3 technical support.

RATS Upgrade

An upgrade of the RATS (Rutgers Account Tools and Services) tool in planned for the fall 2006 semester. This upgrade will include hardware upgrades, as well as a rewrite of the application, including major functionality enhancements, such as online password resets for users.

Background

The mission of the Rutgers University Computer Store and Computer Repair is to provide the University community with a timely, convenient, and economical means to obtain personal computers, printers, and peripherals in an unbiased environment, and to provide departments and individuals with a high level of hardware support. Our goal is to be the single point of contact for the computing hardware needs of the students, faculty, and staff of Rutgers University.

David J. Souren
Assoc. Director

The Rutgers University Computer Store and Repair division provides computer hardware and peripheral sales and support services to the University community. The Store and Repair operations are almost exclusively self-supporting auxiliary units, receiving sole state-funded support from a single manager's state-funded line position. The Computer Store operates on a simple principle: buy in bulk and sell at a slight markup to cover costs. This strategy allows the Computer Store to provide the University community with a valuable volume purchasing service, free from the profit motivations of outside retail operations.

Nowhere is the service orientation of NBCS more obvious than in the Computer Repair division. In the computer industry, repair groups are almost always funded out of profits from hardware sales. In general, repairing computer equipment and peripherals represents a losing proposition for retail establishments. Those service organizations that make money charge astronomical rates. In contrast, Rutgers University Computer Repair charges very reasonable rates, usually between half and two-thirds of what repairs would cost outside the University.

The Rutgers Computer Store offers factory authorized sales to departments and individuals on all campuses from its location in Records Hall on the College Avenue Campus, New Brunswick. Favorable pricing is available through first-tier buying relationships with industry-leading manufacturers and distributors. Options, peripherals, hand-held devices, and printers from most major vendors are also available through Higher Education Reseller Programs in which the store participates. The Computer Store provides unbiased advice, configuration information, and product support to all areas of the University community. The Computer Store also offers just-in-time delivery and secure storage of new and existing systems.

The Rutgers Computer Repair group offers factory authorized service for Apple, Dell, Gateway, Hewlett-Packard, and Lenovo (IBM) systems and peripherals as well as Xerox desktop imaging products. In addition to warranty service, Computer Repair offers time-and-materials support on most brands of computers, printers, and peripherals, with free estimates for all upgrades. Computer Repair also offers virus and spyware removal and operating system restoration services, during which every attempt is made to preserve the client's data rather than just wiping the computer and reinstalling the operating system. Industry-standard component parts are available at attractive pricing for individuals who wish to maintain their own systems, and industry-standard customized Computer Repair personal computers are sold through the Computer Store. Pick-up and delivery of equipment is available for students and Rutgers departments.

Computer Repair Transactions

Computer Repair processed 870 transactions in the spring semester of 2005. The transactions included a majority of departmental transactions (60%), as well as student transactions (26%). Faculty/staff comprised another 12% of Computer Repair transaction, and non-Rutgers affiliates made up 2%.

43% of Computer Repair transactions were warranty repairs. 13% of transactions were parts only: an internal part was sold without installation. In some cases, external parts were sold through Computer Repair as a convenience to the customer. 6% of all transactions were for virus and spyware removal. During the back-to-school period, there is a greater instance of virus and spyware removal as students attempt to access the Rutgers network and are denied access due to problems with their computers. 38% of transactions was for other services, such as time-and-materials support, upgrades of systems, and sale and installation of internal parts.

Computer Repair Transaction Breakdown by Customer Type, Spring 2005

Departmental	516	$74,854.18
Faculty/Staff	108	$14,075.2
Student	227	$24,888.99
Non Rutgers	18	$1,228.72
Non Rutgers Tax Exempt	0	$0.00
Tax Exempt	1	$0.00
Total	870	$115,047.09

Computer Repair Transaction Breakdown by Service Type, Spring 2005

Type	# of Transactions	Total Sales
Warranty Repair	377	$13,679.31
Virus & Spyware Removal	48	$4,998.98
Parts Only	117	$30,267.57
Other Services	328	$66,101.23
Total	870	$115,047.09
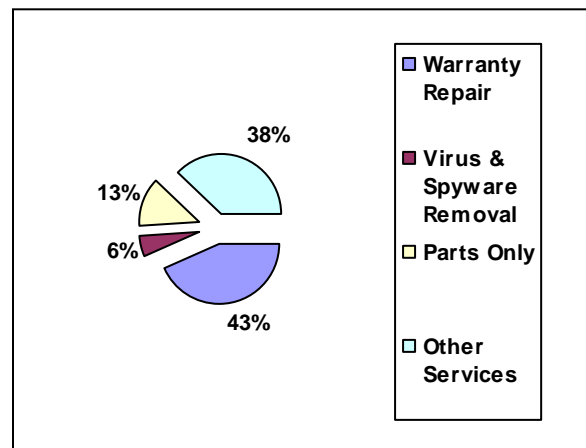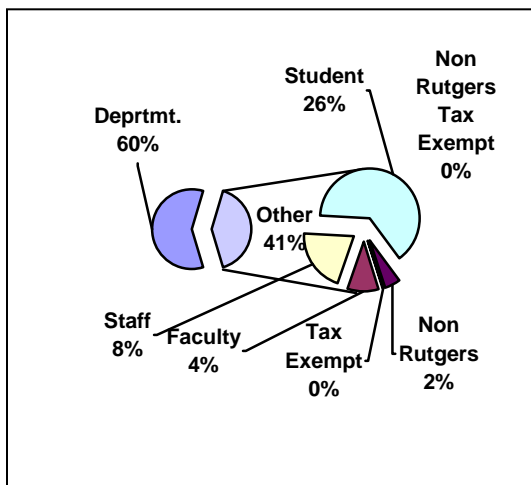
Computer Store Transactions

The Rutgers Computer Store processed a total of 1,041 transactions during the spring semester of 2005. Departmental sales comprised 68% of the transactions, student sales were 21% of the transactions, and faculty/staff sales made up 11% of transactions. While student sales comprised 21% of the total number of transactions at the store, they only resulted in 1% of the Computer Store's total sales dollars. Student, faculty, and staff sales account for 32% of the Computer Store's transactions, but account for only 3% of the Computer Store's sales dollars.

Computer Store Transaction Breakdown by Customer Type, Spring 2005

Type	# of Transactions	Total Sales	Average $/Sale
Departmental	705	$2,454,508.66	$3,481.57
Faculty/Staff	119	$58,739.64	$493.61
Student	217	$38,109.15	$174.01
Total	1041	$2,551,357.45	$2,450.87

# of Sales Transactions

Totals Sales in Dollars
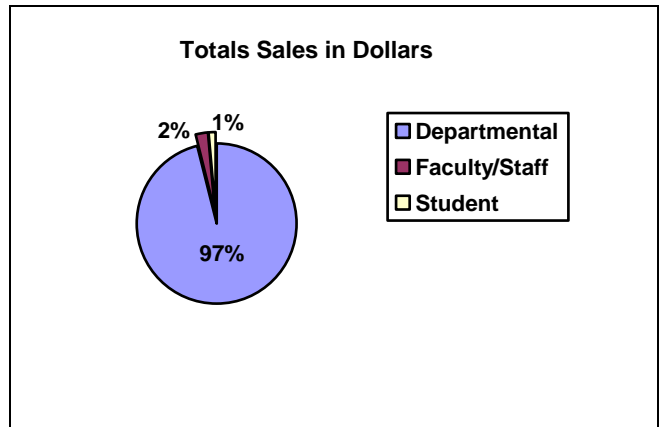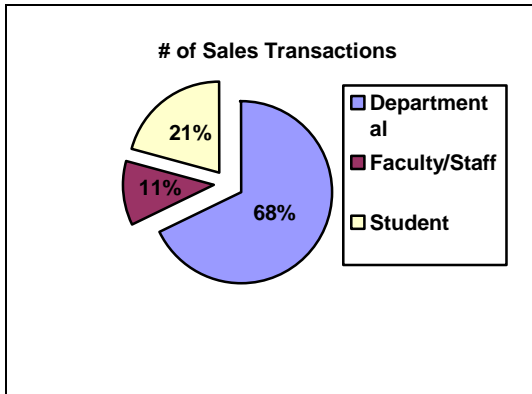
Note: The January 2005 to June 2005 period does not include the back-to-school rush, which results in much larger student purchase totals. These figures are shown in the Fiscal Year 2005-2006 figures.

Accomplishments: Fiscal Year 2005-2006

Participation in SWAT
For the past three academic years, the Computer Store and Computer Repair collaborated with the Computing Support Center staff to assist incoming resident freshman and transfer students to get their computers online and registered quickly and efficiently on the residential network. Students do not always know where to turn for help and appreciate the onsite assistance. Students and parents like the SWAT teams' presence because immediate help is on hand for technical issues. The Computer Store is available on-site to offer convenience items students may have forgotten to bring, such as power strips, Ethernet cables, and laptop locks. Some of the products offered for sale are items that students typically do not think to purchase until they arrive on campus. The Computer Store sells these items at reasonable prices, and in the process, builds good customer relations with a potential new customer base. Ultimately, the students greatly benefit from the availability of free technical advice and guidance over the course of the move-in weekend.

Implementation of Internal Daily Transaction System
MSSG (Mircocomputer Support Services Group) designed a system for the Computer Store and Repair to use to process daily transactions. This system was custom designed for the Computer Store and Repair using database technology for maintaining current product pricing and customer price quotes. Additionally, the website was designed to programmatically interface with a new financial management and monitoring system which can review sales data in real time to help the Computer Store more closely monitor and achieve fiscal goals. The system was implemented by the Computer Store in 2004, but Computer Repair implementation occurred in July, 2005.

Integration of Hewlett Packard
Computer Store and Repair fully integrated HP (Hewlett-Packard) products and services into their system this year. Standard configurations were added to the CPP (Computer Purchase Program) initiative. Authorized warranty and time-and-materials support are being offered by Computer Repair. The Computer Store and Computer Repair maintain regular contact with HP to improve the service they and HP are able to provide to the University community. Customers purchasing HP equipment are being advised with a better understanding of what can sometimes be extended lead times on HP products.

Weekly Ads in the Daily Targum
The Computer Store and Repair ran weekly advertisements in The Daily Targum. The purpose of the advertisements was to increase business and student awareness of the Computer Store and Computer Repair. The advertisements varied weekly and offered short-run specials. Special pricing was featured on machines such as Dell, HP, Gateway, and Apple, and discount coupons were offered for iPods and USB flash drives.

Negotiations of Lab Bundle Pricing
The Computer Store negotiated pricing for the purchase of computers for the CCF labs. Each year, 1/3 of all computers in the CCF labs are replaced with new machines. The Computer Store negotiates prices for the quantities the labs will purchase. As an added bonus to the University community, the Computer Store makes the same great pricing available to individuals for personal purchases.

Computer Repair Transaction Breakdown
Computer Repair processed 1,271 transactions in the fall semester of 2005. The transactions included a majority of student transactions (57%), as well as departmental transactions (34%), faculty and staff transactions (8%), and non-Rutgers transactions (1%). Alumni transactions were negligible. This is a large shift from the majority from the previous semester, due to the increased personal sales to students during SWAT. The huge increase in student transactions correlated closely with the increase in parts-only transactions.

22% of Computer Repair's transactions were warranty repairs. 50% of transactions were parts-only, which means that an internal computer component was sold without installation. In some cases, external parts are sold through the Computer Repair group as a convenience to our customers. SWAT transactions only account for part of this total. 12% of all transactions were for virus and spyware removal. Another 12% of all transactions were for non-warranty repairs, also referred to as time-and-materials support. In most cases, this support is for systems that are out of warranty, but a percentage of this support is also due to customers damaging their machines. 4% of transactions were for other services. This includes general labor charges, upgrades of systems, as well as sale and installation of internal parts.

Computer Repair Transaction Breakdown by Service Type, Fall 2005

Type	# of Transactions	Total Sales
Warranty Repair	276	$11,343.00
Non-Warranty Repair	158	$36,503.49
Virus & Spyware Removal	150	$14,923.32
Parts Only	633	$45,505.05
Other Services	54	$14,950.84
Total	1,271	$123,255.70

Computer Repair Transaction Breakdown by Customer Type, Fall 2005

Departmental	435	$73,052.95
Faculty/Staff	100	$13,770.18
Student	718	$32,114.56
Non Rutgers	14	$4260.02
Alumni	4	$57.99
Total	1,271	$123,255.70

Total Repair Transactions By Service Type Fall '05
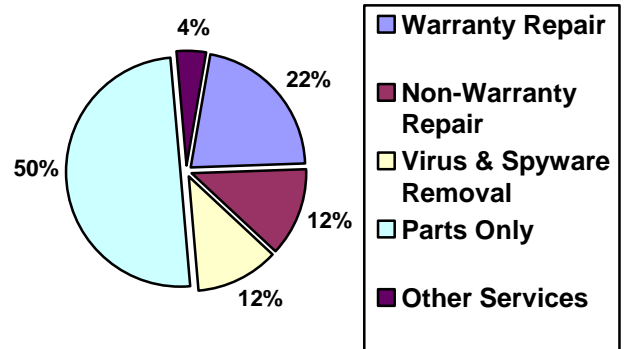
Total Repair Transactions By Customer Type
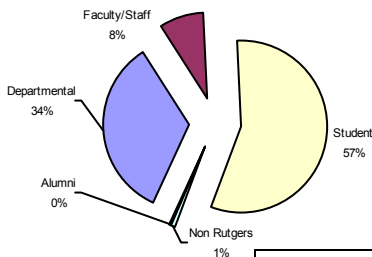
Total Repair Dollars By Service Type Fall '05
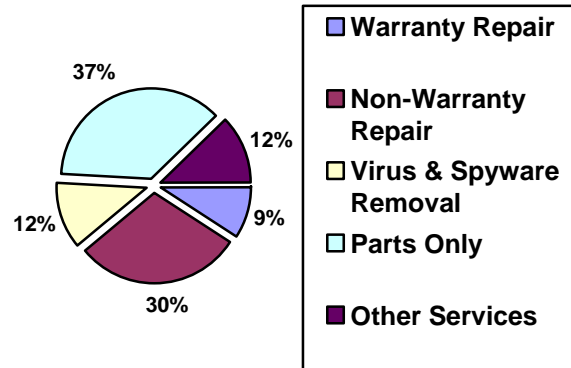
Computer Repair Transaction Breakdown by Customer Type Fall '05 - Total Repair Dollars

33
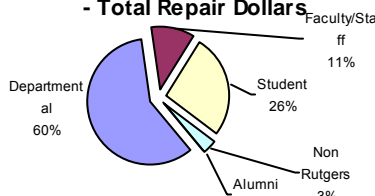
Computer Repair processed 783 transactions in the spring semester of 2006. 61% of transactions were departmental, and 34% were student transactions. Faculty/staff comprised another 15% of transactions, and non-Rutgers transactions made up 1%. Alumni transactions were negligible. The variation from the fall 2005 semester is due to the large percentage of personal purchases by students that are processed during the back-to-school period.

39% of Computer Repair's transactions were warranty repairs and 17% were parts only. This is much lower than the 50% during the fall 2005 semester. 12% of all transactions were for virus & spyware removal. Another 26% was for non-warranty repairs, and 6% were for other services.

Computer Repair Transaction Breakdown by Customer Type Spring 2006

Departmental	469	$64,890.71
Faculty/Staff	118	$20,948.34
Student	184	$21,909.67
Non Rutgers	10	$1,804.12
Alumni	2	$1690.70
Total	783	$111,243.54

Computer Repair Transaction Breakdown by Service Type Spring 2006

| Type	# of Transactions	Total Sales
Warranty Repair	310	$11,039.10
Non-Warranty Repair	201	$41,811.78
Virus & Spyware Removal	94	$10,246.54
Parts Only	131	$41,821.78
Other Services	47	$6,324.34
Total	783	$111,243.54

**Total Repair Transactions
By Customer Type Spring '06**

Departmental 61%
Faculty/Staff 15%
Student 23%
Non Rutgers 1%
Alumni 0%

**Total Repair Transactions
By Service Type Spring '06**

- Warranty Repair
- Non-Warranty Repair
- Virus & Spyware Removal
- Parts Only
- Other Services

12% 17% 26% 6% 39%
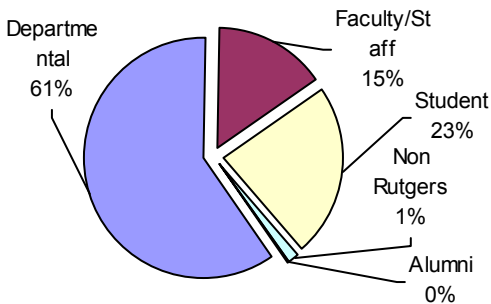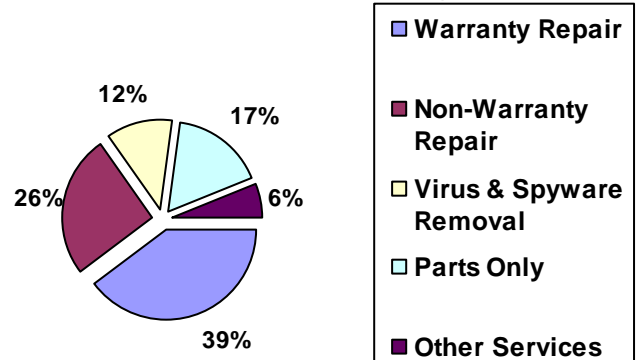
**Total Repair Dollars
By Customer Type Spring '06**

Faculty/Staff 19%
Student 20%
Non Rutgers 2%
Departmental 57%
Alumni 2%
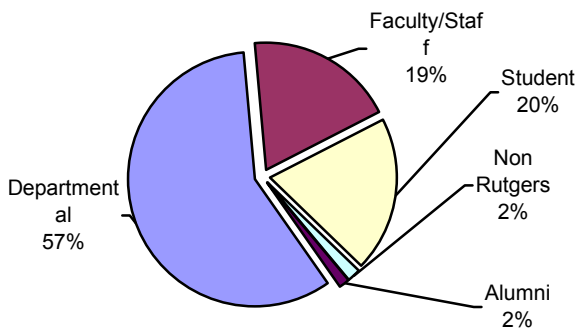
Comparison of Fees from Computer Repair and 2 Main Competitors, Spring 2006

	Computer Repair	Geek Squad	CompUSA
Desktop Repair	$90.00	$229.00	$99.99
Laptop Repair	$120.00	$229.00	$139.99
Printer Repair	$105.00		$99.00 *Drop Off Only!
Virus Removal	$85.00	$199.00	$99.99
Virus Removal On-Site	$85.00	$229.00	$169.99
Data Migration	$40.00	$129.00	$50.00

Comparison of Fees from Computer Repair & 2 Main Competitors
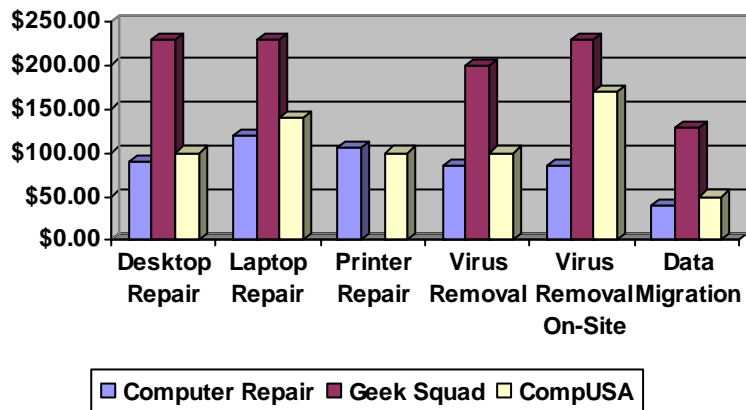
Computer Store Transaction Breakdown

The Computer Store processed a total of 1,779 transactions during the fall semester of 2005. Departmental sales comprised 36% of the transactions, student sales were 55% of the transactions, and faculty/staff sales made up 9%.

These numbers are very different from those from the spring 2005 semester. Student transactions shifted from only 21% of the total number to 55%. The primary reason for this is the back-to-school rush. Transactions that were processed by staff on location with the SWAT teams were primarily entered into the repair system; the huge increase is due to walk-in sales at the Store.

Although student sales comprised 55% of the total number of transactions at the Computer Store, they only resulted in 8% of the Store's total sales dollars. Adding faculty/staff sales shows that 64% of the transactions account for only 12% of the sales dollars. The fall semester historically has a much lower sales dollars amount, specifically from departmental purchases, due to bulk purchasing programs that take place in the spring semester. The 36% of sales transactions to University departments still made up an astounding 88% of the sales dollars.

The Computer Store processed a total of 1,071 transactions during the spring semester of 2006. Departmental sales comprised 62% of the transactions, student sales were 25% of the transactions, and faculty/staff sales made up the remaining 13%. These numbers are consistent with what the Store saw in the spring of the previous year.

While student sales comprised 25% of the total number of transactions at the store, they only resulted in 2% of the total sales dollars. 48% of Computer Store transactions from students, faculty, and staff account for only 5% of the total sales dollars. The additional 95% of sales dollars comes entirely from departmental purchases, which are high in the fall semester due to bulk purchasing such as CCF lab refreshes.

Computer Store Transaction Breakdown by Customer Type, Fall 2005

Type	# of Transactions	Total Sales	Average $/Sale
Departmental	648	$1,630,062.81	$2515.53
Faculty/Staff	157	$82,772.27	$527.22
Student	974	$145,199.13	$149.08
Total	1779	$1,858,034.1	$1,044.43

# of Sales Transactions

- Departmental
- Faculty/Staff
- Student

Totals Sales in Dollars

- Departmental
- Faculty/Staff
- Student
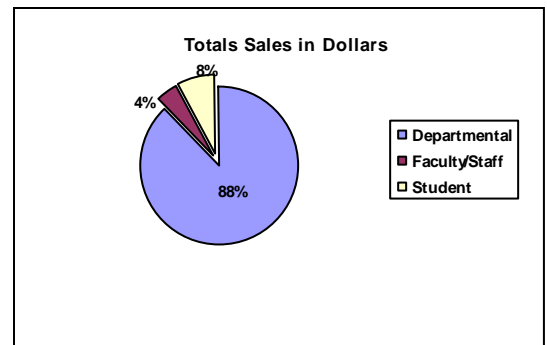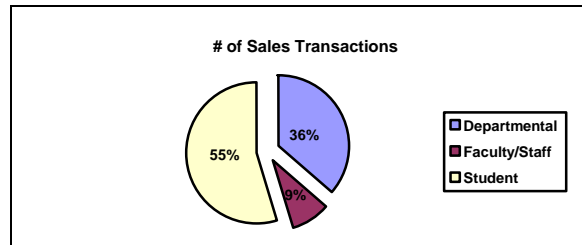
Computer Store Transaction Breakdown by Customer Type, Spring 2006

Type	# of Transactions	Total Sales	Average $/Sale
Departmental	658	1,884,553.66	$2,864.06
Faculty/Staff	142	$60,758.39	$427.86
Student	271	$40,192.15	$148.31
Total	1071	$1,985,504.20	$1,853.88

Computer Store Transaction Breakdown by Customer Type Spring '06 - # of Sales Transactions
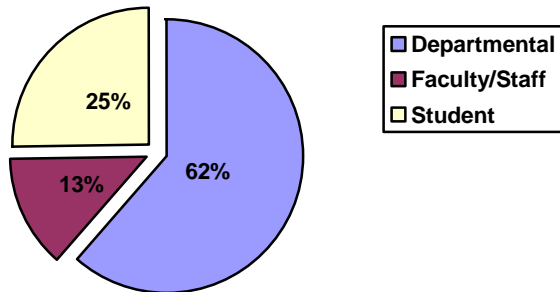
Computer Store Transaction Breakdown by Customer Type Spring '06 - Total Sales in Dollars
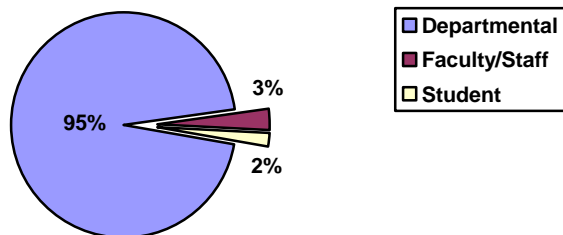
Auxiliary Funded Operation

The Rutgers University Computer Store and Repair operate as an auxiliary funded cost recovery center within the Campus Computing Services division of the Office of Information Technology. As a cost-recovery center, all the expenses incurred by the group, including staff salaries, must be recovered through external billing. This income is earned in several ways: the Computer Store places a margin on the items it sells; Computer Repair generates funds from the repair and upgrade of personal systems, warranty payments from its participating business partners, and blanket releases for departmental repairs.

The major recurring expense that must be recovered is the salaries and benefits of the staff, which was nearly $600,000.00 for the year. The margin placed through the Computer Store and hourly fees charged by Computer Repair are formulated to cover the expected costs and provide a small ending balance. Forecasting potential demand versus averaging mark-ups to achieve this goal requires fiscal responsibility and constant oversight by all concerned.

Expected Budget Cuts

The expected budget cuts for next year will represent an even greater challenge to the Computer Store and Repair. If the amount the University spends on computer equipment and repairs drops too low, it will be difficult to continue covering the group's costs.

Competitive Pricing

The Computer Store has the challenging task of providing is clients with competitive pricing within a suburban environment that has aggressive local computer resellers (for personal purchases), and contracts in place through Purchasing for the departmental buyer. Price is an important factor, but overall service to the client is what either captures future sales or sends the business elsewhere.

A main area of focus for the coming Fiscal Year is to increase personal purchases to students, faculty, and staff who are generally motivated by pricing and ease of purchase. The Computer Store performs comparative pricing frequently on most popular items to ensure that product offerings are competitive with local businesses. The Store also samples pricing for items available via the Internet. Pricing and individual models change frequently, which makes keeping the Computer Store's web site current a challenging process.

Repairs and Upgrades

Computer Repair plays a vital role for the University community and is the main means for students, faculty, and staff to have both personal and departmental systems and printers repaired and upgraded on-campus. In the past, Computer Repair focused its efforts on the support of departmental equipment, but the deployment of Unit Computing Specialists in recent years has changed this model. For any repair service to be timely and cost-effective, it must be positioned to meet the real needs of its clients. Therefore, Computer Repair has changed to respond appropriately. The operational goal of any repair service is to cover the cost of its operation while providing the type of service that is necessary, and in Computer Repair's case, this meant modifying the focus to meet changes at Rutgers University and the computer industry as a whole.

Improved Service Model

It still remains one of the Computer Store's main operational goals to transition the service model to better meet the personal computing needs of the students, faculty, and staff. The Computer Store believes it should focus its efforts in this area in the coming year. This constituency represents the Computer Store's best opportunity to serve the University community and recover the costs associated with providing their services.

Computing Support Center

Background

Keri Budnovitch
Assoc. Director

The Computing Support Center is a newly formed group consisting of the NBCS Help Desk, NBCS Operations, and ResNet Support. This group was formed in the spring 2006 semester, and all three groups are working to merge into one support operation in order to provide excellence in customer service in computing at the University.

HELP DESK
The mission of User Services and the New Brunswick Computing Services Help Desk is to provide friendly customer service in an effective and timely fashion. In addition to solving computing problems, the Help Desk is dedicated to providing tools to help the Rutgers University community learn about computer technology in order to better use it in their educational and professional endeavors.

The New Brunswick Computing Services Help Desk serves as the main point of contact for students, faculty, and staff with computing related questions on the New Brunswick/Piscataway campus. Approximately 40 part time student consultants, two student supervisors, and six Full time staff members comprise the Help Desk/User Services group. Users contact the Help Desk by calling (732) 445-HELP, or by emailing various support addresses; help@eden.rutgers.edu, help@rci.rutgers.edu, and helpdesk@nbcs.rutgers.edu. Users can also receive support by visiting the Help Desk in person in Hill Center, room 13. All contacts to the Help Desk are documented in HDRT (Help Desk Request Tracker). Help Desk consultants detail the caller's initial problem or question, as well as any troubleshooting they perform to try to resolve the problem. In the event that the problem cannot be resolved during the initial contact, the consultant refers the issue to a secondary support area. The Help Desk has SLAs (Service Level Agreements) with over 10 computing departments at the University who provide second level support. The majority of questions the Help Desk receives pertain to ResNet (Residential Networking) issues in dorms on the New Brunswick/Piscataway campus. ResNet office consultants provide second level support to the Help Desk consultants in the Support Center. Housing Help Desk and ResNet consultants in the same location helps to ensure that dorm networking issues are resolved quickly. The Help Desk also fields calls about services offered centrally, such as email and web-based applications.

NBCS OPERATIONS
The mission of NBCS Operations is to provide 24x7 monitoring and support for select critical networks and systems, as well as the environment in which they reside. Operations maintains the integrity of the University's computing community with primary support to all central systems, as well as secondary support to the University's networks and various departmental servers.

The Operations group is primarily responsible for maintaining 24 hours, 7 days per week coverage for the Hill Center machine room. The group monitors over 400 devices and 1,200 services covering every campus of the University. Operations employs 4 full time staff members and up to 20 student staff members to monitor these devices and services and ensure that proper contact protocols are followed during any outages of services or devices.

RESIDENTIAL NETWORKING - SUPPORT
The mission of Residential Networking is to provide excellence in customer service and technical support to the residents of University housing, and to ensure the integrity of the residential network. ResNet Support addresses the customer service and technical support aspects of this mission.

Residential Networking is responsible for providing second level customer support for over 13,000 registered students (potentially over 14,000 students) living in University housing. ResNet employs 3 full

time and over 40 student staff members to provide this support. Over 30 student field consultants provide support via individual user appointments for students experiencing difficulty getting their computers registered, passing ruCompliant, and various other network related computer problems. 13 office staff members support both the ResNet field consultants and provide second level support for Help Desk consultants receiving ResNet related calls. Office staff members also help monitor the residential network and research difficult technical problems under the guidance of the ResNet Technical Manager. 8 student campus supervisors help manage this group, along with addressing more technical issues with the ResNet Technical Manager. 2 student programmers provide support for ResNet and the Help Desk through programs developed for the Support Center groups under the guidance of the Technical Manager.

The Computing Support Center, located in Hill Center room 013 on the Busch Campus, houses the NBCS Help Desk and the Residential Networking office staff.

HELP DESK

Summer Consultant Training

In previous years, the Help Desk summer training for new consultants consisted of two separate training sessions: one 8-hour, lecture format session at the beginning of August, and a 4 hour refresher training, also in lecture format. The problem with this format was that at the beginning of the semester, consultants did not have the hands-on experience necessary to provide the best service possible. It took consultants some time to get used to the Help Desk facility and services in order to effectively help callers. This was frustrating for both consultants and users. To address these issues, the Help Desk developed a hands-on training format over the course of the spring semester to be implemented over the summer of 2005. The goal was for all Help Desk hired and wait-listed consultants to participate in 8 hours of hands-on training over the summer. All newly hired and wait-listed Help Desk consultants attended a New Employee Orientation session in April, and attended Help Desk training during the summer.

Summer consultant training sessions were conducted by Help Desk Senior Consultants. Each day, two new consultants came in to train. During the training day, trainers covered all the material that was previously covered in the 8 hour lecture training and the new consultants were able to take phone calls from users under the direct supervision of their trainers. Training phone calls were monitored by the trainer and immediate feedback was given to the new consultant.

This training approach had many advantages. The primary advantage was that new consultants were better equipped to handle phone calls at the beginning of the semester; they had prior, hands-on experience using HDRT and the Help Desk phone system. Additionally, Help Desk supervisors were able to get to know the consultants better when training on a one-on-one basis. This made the consultants more comfortable with the supervisors and Senior Consultants and allowed supervisors to quickly determine if a consultant needed more help or additional training.

Improved Communication with Help Desk Staff

In the past, the Help Desk had a difficult time ensuring that important information was filtered to consultants in a timely fashion. Communication occurred primarily via a set of Listserv mailing lists to which all Help Desk consultants were subscribed. These lists were used to communicate information about outages and problems that users report to the Help Desk, as well as solutions to known problems. While this method of communication worked well, at the beginning of the semester, when the Help Desk is at its busiest, it was often challenging for consultants to read their email. Communication during this busy time is crucial and it is important for consultants to receive all critical information. In order to more effectively communicate with consultants, the Help Desk developed a web portal system to use as an internal staff webpage. During the spring 2005 semester, the web portal was developed using PostNuke. In order to address known security issues with PostNuke, the internal site was later changed to use Drupal. On this webpage, Help Desk supervisors can post important information in the form of news items. In addition to the news items, the internal page hosts several forums that consultants use to communicate with each other. This new tool has been very effective and makes communicating between Help Desk supervisors and consultants much easier.

NBCS OPERATIONS

Staffing the Hill Center Machine Room

NBCS Operations met their goal of providing 100%, 24 hours, 7 days per week coverage for the entire spring 2005 period. This included a blizzard in January (21st/22nd) during which most of the University was unstaffed. This goal represented a significant challenge to the group.

Monitoring Services

During the spring 2005 semester, Operations added 95 new hosts and 254 new service checks to the list of items the group monitors on a 24X7 basis for many different customers. 32 hosts were decommissioned during the spring 2005 semester, but overall, this was a 16% increase in the hosts and services that Operations monitors.

41

Content Management System

NBCS Operations continued the evolution of their online CMS (Content Management System). The CMS, which utilizes TikiWiki version 1.9.2, consists of over 400 pages, and new developments include the creation of a Systems Information Page. This page is a central location for information about devices located in the Hill Center machine room. The page is linked to dozens of other pages that help to direct Operations staff to the proper contact protocols that have been acquired from customers. The entire CMS is secure and is accessible only to Operations and CSS (Central Systems and Services).

One of the implemented innovations utilized within the Systems Information Page is that of machine classes. Customers can choose when they want to be contacted about a degraded device or a degraded service. These classes are defined in the chart below.

These contact classes enable personal contact customization for every device and service that is listed on the CMS page. This represents a significant accomplishment in the organization that enables Operations staff to better serve its customers and gives customers more service options.

NBCS Operations Classes for Contact Protocol	
7X24	Call Anytime
7X14	7 days/week, 8am-10pm
5X14	Monday –Friday, 8am-10pm
5X8	Monday-Friday, 9am-5pm
Email Only	Contact is only made via email
Ignore	No contact should be made

Student Operator Hiring and Training

The three members of Operations supervisory and management team conducted approximately 45 interviews in March and April, 2005 to fill the anticipated void left by non-returning part time staff. Through these interviews, Operations was able to find 10 students who were either hired or wait-listed for student employee positions with Operations. Hired and wait-listed candidates attended a New Employee Orientation session in April.

Operations created a refresher course for part time staff which was taught in the beginning of

February. The training covered the newly created Systems Information Page, and re-enforced protocols to returning student employees.

During the spring 2005 semester, significant time was spent to develop the new hire training program that was taught to all new employees in August. Operations had two full-day, hands-on training sessions that were conducted in the Operations office, utilizing the operator workstations. This represented a significant upgrade to previous training sessions, which were not hands-on and were presented in large lecture rooms. Operations also developed two online WebCT quizzes that were used in conjunction with the training program. The first quiz was used prior to the training sessions, to help gauge the knowledge that the group already possessed. The second quiz was used after the training sessions. The quizzes provided Operations supervisors with information about how well the trainers performed, and showed areas in which trainers needed to focus more attention.

In addition to the two hands-on training days, Operations expanded their work-along program for newly hired student employees. This program was enhanced from a 1-day, 3 hour session to 2 days, three hours per day. The 2-day work-along program helps better prepare newly hired staff, not only because the amount of material covered is more comprehensive, but because it provides the employee an opportunity to reflect on concepts that might not have been clearly understood during the first session, as well as the opportunity to ask questions about those concepts before their first shift.

Listserv Support

During the spring 2005 semester, Operations continued to provide Listserv support for approximately 3,000 mailing lists used University wide. During this semester, 195 new mailing lists were created (133 from 1/1/05-5/15/05 and 62 from 5/15/05 through 7/31/05). In that time, 66 tickets were addressed utilizing HDRT (41 through 5/15/05, 25 from 5/15/05 through 7/31/05). Additionally, Operations received approximately 80 phone calls during this period with question concerning Listserv issues.

SSL certificates
Operations continues to support SSL web server certificates. The group issued 19 new certificates and renewed 32 existing certificates between January and July, 2005.

Environmental Challenges
Operations monitored and addressed several environmental projects and outages during the spring 2005 semester. During March, April, May, and June, there were 9 brief periods of time during which the machine room was on battery power but did not switch to generator power. An additional 28 minute power outage occurred in June, during which the generator successfully engaged. In March, the secondary water loop required maintenance, forcing all HVAC units to be shut down for a period of approximately 8 hours. Portable AC units were installed and used for the day. Other issues included air conditioning units being offline, leaking, or requiring service, the generator being offline for service on 3 dates in April and May, and the UPS being offline for service in May.

RESIDENTIAL NETWORKING - SUPPORT

ResNet Hiring and Training
During the spring 2005 semester, ResNet participated in the annual NBCS hiring drive. Over 65 interviews were conducted, 22 candidates were ultimately hired, and 11 candidates were placed on the wait-list for the fall 2005 semester. Under the guidance of the ResNet Manager, ResNet Student Supervisors conducted the interviews and selected the candidates to be hired. Candidates attended a New Employee Orientation session in April, and a New Hires training session at the beginning of August. All new and returning staff attended a training session at the end of August to prepare for the fall semester.

ResNet Symposium 2005
In June, 2005, ResNet represented Rutgers University at the 2005 ResNet Symposium at the Georgia Institute of Technology in Atlanta, Georgia. Two presentations were delivered: "Rutgers University Announces ruQueue: An Open Source Trouble Ticket System for Higher Education", presented by Keri Budnovitch and

John Fulton, and "Residential Networking: Registration and Authorization System" presented by Albert Vasquez and Jacqueline Hindle.

CSC Associate Director Keri Budnovitch and MSSG Systems Programmer John Fulton announced the open source version of HDRT (Help Desk Request Tracker), called ruQueue, at the symposium. This program was developed in-house by John Fulton and MSSG for the New Brunswick Computing Services Help Desk, and was released as open source software during the summer of 2005. The program enables the Help Desk to track over 4,000 user calls during move-in weekend every fall semester by using trouble tickets to log all calls and user questions. Since its inception at Rutgers University, other computing departments at the University have started using HDRT. In addition to logging trouble tickets, HDRT also facilitates the process of scheduling technical support visits to residents of University housing. At the end of the ResNet conference presentation, Keri and John distributed bootable demo CDs of ruQueue,

Keri Budnovitch and John Fulton presenting ruQueue at the ResNet Symposium, June 2005.

including links to the source code. The presentation was very well received, and many members of the conference audience were interested in obtaining the ruQueue bootable CD.

LSS Manager/ResNet Technical Manager Albert Vasquez and ResNet Manager Jacqueline Hindle presented the Rutgers ResNet registration system at the symposium. This system was developed in-house by Raymond Hu of LAN Support Services as well as student staff. Over 13,000

users register their computers on the residential network each semester using the registration system. The process involves obtaining a DHCP

Al Vasquez and Jacqueline Hindle presenting ResNet Registration and Compliance at the ResNet Symposium, June 2005.

IP address, and automatic checking of each user's computer for required operating system updates, an anti-virus program, and a virus scan using the Rutgers University ruCompliant program. The registration system also integrates Rutgers' trouble ticket system (HDRT/ruQueue). Integration of these two systems allows students who are having a difficult time registering to log a ticket to receive phone support or an appointment in their dorm room to help resolve their problem. The presentation covered the registration system from the support staff point of view, demonstrating the various features and utilities available in the system, as well as from the user perspective. A demonstration showing the registration and ruCompliant processes was shown. The presentation was very well received, and many other Universities in attendance at the conference inquired whether the registration system would be available for open source distribution in the near future.

HELP DESK

Back-to-School Move-In

The Help Desk was the main point of contact for all questions relating to getting new and returning students online in the dorms during move-in weekend. With the support of ResNet staff, Help Desk consultants fielded calls from students during the move-in weekend and assisted callers with resolving issues that prevented them from getting online.

The fall semester back-to-school period is by far the busiest period for the Help Desk. Incoming first year students, transfer students, and returning students move into University dorms and apartments and all want to get online. There are many references available to help students register their computers on the Rutgers residential network, and many are able to do this on their own. For those who cannot, members of the Help Desk and ResNet staff is available to help them. The Help Desk staff is equipped to handle a vast array of basic networking issues, ranging from registering a computer on the residential network via the ResNet registration system, to more advanced network connectivity issues. More advanced or difficult calls are escalated to the ResNet office staff.

The majority of calls that come into the Help Desk during the move-in and beginning of the semester period have to do with making sure users' computers are ruCompliant. ruCompliant checks that a computer is up-to-date with critical Windows patches, running approved antivirus software, and makes sure that each computer is virus-free by running a full-system scan. In the even that a computer does not pass any of the ruCompliant checks, the user needs to fix the issue and then re-run ruCompliant. The majority of support calls the Help Desk receives at the beginning of the semester are related to users having trouble passing ruCompliant and registering their computer. In order to field calls and help users with the ResNet registration process, the Help Desk increases its staffing from 7 student consultant to 13 student consultants from 8:30 A.M. to 10 P.M. Increased staffing ensures that all calls are dealt with as quickly as possible. During the move in period for fall 2005 (August 20 – September 20,

2005), the Help Desk handled 13,353 support calls.

The spring semester back-to-school period is also a very busy time for the Help Desk. While the number of new students moving into the dorms is relatively low during the spring, every student living in a 10-month housing assignment must re-register his or her computer and run ruCompliant. Additionally, students may bring their computers home over winter break and use alternate ISPs. Students who experience difficulty with registering their computers or passing ruCompliant call the Help Desk. During the back to school period in spring 2006 (January 17 – February 17, 2006), the Help Desk handled 8,138 support calls.

Student Recognition

Sarah Beetham, Support Center Supervisor, was recognized as a Student Employee of the Year by the Rutgers University Student Employee of the Year Selection Committee. Sarah was nominated by the Support Center full time staff. In April 2006, her achievements were celebrated in an award ceremony presented by the Student Employment Office.

OPERATIONS

Monitoring Activities

NBCS Operations reviews approximately 100 machines on 2 console servers every 2 hours each day, as well as outside connectivity for 6 external hosts. Systems administrators for these machines are contacted via email about any console messages that they should be aware of. Staff also reviews and reports on the weekly exercises of the generator and monitor, report, and reset any UPS alarms. Disk usage on ICI and NBCS systems is monitored and reported. A total of 1,320 service checks are monitored for the hosts Operations monitors. The operators are responsible for following the proper contact protocols and escalation procedures for all

monitored hosts and services. Operators place service calls to outside vendors such as Sun and NetApp as needed or when prompted, and interact with vendors during ongoing issues. Operators place service calls to Facilities and Maintenance Services, as needed, and log ongoing conditions and follow up as necessary.

In addition to monitoring hosts and devices, Operations also performs environmental checks of the Hill Center machine room. Every 2 hours, staff checks under the floor panels of air conditioning units for leaks, alarm panels (PDU, UPS, AC, Fire, Sprinkler), and system racks (LEDs, alarms, unusual noises and smells).

Departmental Hosts Operations Monitors	
Department	**Number of hosts**
Camden	9
CCF	173
CSS	193
LCSR	2
MSSG	2
OIRT	7

During the spring 2006 semester, Operations monitored 52 new hosts and 81 service checks on a 24 X 7 basis. While 36 hosts and 60 checks were decommisioned or otherwise removed from monitoring, this represented about a 2% increase in the number of host/services that are being monitored by the group. In total, Operations now monitors over 500 hosts and almost 1,400 services.

The Operations group continued to provide customized contact services to their customers. Operators contacted customers for approximately 530 incidents during the spring 2006 semester to make them aware of a degradation of their services.

Operations Outage/Degradation Contacts, Spring 2006	
Month	**# of Customer Contacts**
January	131
February	114
March	141
April	109
May	59
June	130

System Shutdowns and Reboots for ICI Systems

Operations performs system shutdowns and reboots for all ICI systems, as requested by systems administrators, during scheduled downtime, or as a result of service degradation, as determined by the systems administrators. Operations also performs shutdowns and reboots of hub servers when requested by authorized personnel.

Content Management System

The group started an overhaul of its online CMS (content management system) of over 450 pages, checking each page for accuracy, and making any necessary updates to keep the online manual up-to-date. This project was started late in the spring semester, and will continue into the summer of 2006. This project will dually act as an initial step in the creation of this summer's training program, which is scheduled to take place in August.

Account Support

The Operations management team continued handling account support issues. During the spring semester, the team handled 51 tickets using HDRT, and replied to approximately 600 requests.

Tape Library

Operations continues to support the tape library, uploading data from tape to RCI for 3 users, as well as returning a significant number of tapes to the user community.

SSL Certificates

The group continued to support SSL web server certificates during the spring 2006 semester, although this service will be moved to MSSG. During the spring semester, Operations issued 13 new certificates and renewed 31 existing certiciates.

Outages

One serious power outage occurred during the Spring semester, on April 27, 2006. All devices located in the machine room ran on generator

power for approximately 50 minutes. Two minor power issues occurred on April 15 and 22, 2006. During these times, the machine room ran briefly on battery power.

RESIDENTIAL NETWORKING - SUPPORT

SWAT and Sweeps

Each fall semester, ResNet runs SWAT sessions over move-in weekend to assist students with successfully registering their computers on the residential network. These sessions are offered primarily in first year student dorms, since first year students are not familiar with the registration process. SWAT has been a very successful project in the past, and this year was no exception. In addition to SWAT during the move-in weekend, ResNet also implemented Sweeps for the first time during the fall 2005 semester. Sweeps consisted of small groups of ResNet supervisors and consultants visiting select dorms during the week after move-in weekend to continue assisting students with the registration and ruCompliant processes. Many students are unfamiliar with the registration process, most students want to get their computers on the network right away, and ResNet staffing is limited at the beginning of the semester. Therefore, it is difficult to schedule individual appointments for every user who has a question. Sweeps of the dorms address this need by allowing users easy access to ResNet staff who can help them for an announced period of time in their dorm. The SWAT and Sweeps schedules were announced to users via the ResNet website, as well as to Residence Advisors, Housing managers, and Residence Life deans.

During the spring semester, ResNet does not normally conduct SWAT sessions at any dorms. Although all students are required to run ruCompliant again in the spring semester, and most students are required to re-register their computers on the network, returning students are familiar with the process by this time and do not require as much assistance as students need in the fall. However, ResNet provided Sweeps in dorms over move-in weekend in January, 2006 where the majority of transfer students were housed. ResNet worked closely with Housing to determine which dorms should be targeted for Sweeps in the spring semester, and new students and returning students appreciated the ResNet presence while they registered their computers on the network.

Consultant Evaluation Program

ResNet developed the beginning phase of a consultant evaluation program during the fall semester of 2005. ResNet student supervisors identified 3 areas in which ResNet consultants need to be proficient in order to be successful at their jobs and provide the level of customer service and technical expertise the group wants to provide for its users: "communication," "user appointments - administrative," and "user appointments - technical." The communication category consists of consultants checking their email for appointment notifications and other important information, completing their payroll on time, checking HDRT for information on tickets assigned to them, and communicating effectively with their supervisors to resolve user problems. The user appointments category spans both administrative issues as well as technical issues. Administratively, consultants are expected to attend their scheduled appointments and update their HDRT tickets in a timely manner with all pertinent information. Technically, consultants are expected to be able to resolve most computing issues that prevent a user from registering their computer on the residential network, and to find creative solutions to new problems. Supervisors developed a ratings system to rate each consultants on their campus in each of the three categories. This evaluation program is scheduled to be implemented for the fall, 2006 semester, pending development of a database to track evaluation notes and ratings. Evaluations will be used to determine training needs in the group, continued employment with ResNet, as well as payraise eligibility.

Student Recognition

Jordan Sanders, ResNet Campus Supervisor, was recognized as a Student Employee of the Year by the Rutgers University Student Employee of the Year Selection Committee. Jordan was nominated by the Support Center full time staff. In April 2006, his achievements were celebrated in an award ceremony presented by the Student Employment Office.

ResNet continues to recognize excellent student staff via the recognition program. Several

categories exist for recognition: Consultant of the Month, Consultant of the Semester, Supervisor of the Semester, and Customer Service Appreciation.

Senior Week, Summer Conferences, and Summer Session

In preparation for supporting Senior Week participants at the end of the spring, 2006 semester, ResNet worked with Housing Associate Director Elizabeth O'Connell-Ganges to compile a list of all seniors participating in Senior Week. Housing provided the list of participant names and room assignments for each dormitory, and ResNet staff looked students up to obtain their NetID. ResNet staff bulk-added users to the ResNet system with each user's NetID, enabling students to obtain network access by registering their computers and running ruCompliant using the same process as during the regular school year. Because students were able to register using their NetIDs, Senior Week registration went much more smoothly than it had in previous years. Over 1,000 users participated in Senior Week and were added to the ResNet system in 1 day.

ResNet created local accounts for summer conference participants in May and June. Local accounts allow individuals to register their computers on the residential network and run ruCompliant even if they are not affiliated with the University academically and do not have a NetID. ResNet created and supported over 4,000 local accounts over the course of the summer. In order to help ensure a smooth registration process for summer interns, ResNet ran a SWAT session to help interns moving in to University Center at Easton Avenue over Memorial Day weekend. Over 200 interns moved in over the course of 2 days, and were able to successfully register and run ruCompliant in order to gain access on the residential network.

In addition to summer interns, Housing also provides dormitory and apartment living to summer session students over the summer. ResNet worked with Housing to obtain names and room locations for each summer session participant. ResNet staff looked up NetIDs for hundreds of summer session students in order to bulk-add them to the ResNet system to allow them to register their computers and run ruCompliant using their NetIDs instead of local accounts for the summer. Additionally, ResNet created local accounts for approximately 50 students housed in Rockoff Hall University Apartments with no University affiliation.

Computing Support Center Merge

During the summer of 2006 and the coming year, the Computing Support Center plans to more closely merge its three groups to achieve a seamless user support operation. Operations staff trained with Help Desk staff during the spring 2006 semester, and Help Desk and ResNet supervisory staff will train with Operations staff over the summer to gain insight into the services Operations provides. Managers from all three groups will serve as supervisors for the Support Center, and supervisory training for this role will also occur during the summer of 2006.

HELP DESK

Student Assistant Supervisor Position

The Help Desk currently employs 7 students in the position of Senior Consultant. Senior Consultants are primarily responsible for helping to train new Help Desk consultants and assisting full time staff with projects. In the upcoming year, this position will be transitioned to an Assistant Supervisor position. In addition to the existing responsibilities, this new position will be tasked with the supervision of Help Desk consultants. Each Assistant Supervisor will be assigned Help Desk consultants whom they are to mentor and evaluate. In addition to the new responsibilities, all Assistant Supervisors will be evaluated by the Help Desk full time staff. The Assistant Supervisor will also be given privileges to change user passwords on the Eden and RCI servers. Assistant Supervisor participation in managing Help Desk consultants will help the full time staff determine in which areas staff may need additional training or help. Additionally, the Help Desk will be able to provide services, such as password changes, even when full time staff is not available in the Support Center. Identifying and improving these areas will positively impact Help Desk consultants and the quality of support that the group is able to provide to the Rutgers community.

NBCS FAQ Database Maintenance

The NBCS FAQ (Frequently Asked Questions) database is an online repository of questions that are frequently asked at the Help Desk, in addition to useful information about computing at Rutgers University. The NBCS FAQ database currently holds about 1,000 questions and answers. Over the past few years, many services previously available at NBCS have been changed or discontinued. This left some FAQs outdated. Over the 2006-2007 Fiscal Year, all of the questions in the database will be reviewed for content and accuracy. After this review, a new interface will be designed and the database will run on the NBCS system rather than its own server. The new interface will make the system easier to maintain and keep up-to-date. Running the software on the NBCS server instead of on a departmental web server greatly reduces overhead and increases the security and reliability of the service.

OPERATIONS

Customer Support and Monitoring Services

NBCS Operations' main goal for the 2006-2007 Fiscal Year is to work closely with the Help Desk in order to expand to a 24 X 7 customer support operation. Operations will continue to provide monitoring and support for critical networks and systems as in the past, and will also continue to provide environmental support for the Hill Center machine room.

RESIDENTIAL NETWORKING - SUPPORT

SWAT and Sweeps

ResNet will continue to offer both SWAT and Sweeps at the beginning of the fall semester. In order to improve SWAT for the August and September 2006 move-in period, ResNet plans to be at central locations on each campus with many staff members, instead of at many locations with few staff members. This will allow each group to send staff out to users' rooms appropriately, and have a few central hubs on each campus from which to coordinate assistance for each building cluster. Additionally, ResNet, in cooperation with Housing, will hang posters in the first-year dorms to alert RAs when and where the SWAT teams will be on their campus.

Summer Network Jack Surveys

In past years, ResNet worked with NI (Network Installation) on surveying network jacks in every dormitory and apartment room and lounge on the New Brunswick/Piscataway campus. ResNet surveyed each room and made minor repairs (faceplate replacement, mini-connector reseating), and reported all major repairs (necessary rewiring) to NI via HDRT. This summer, the NI responsibility has been shifted to TD's (Telecommunications Division) Video Services Group. ResNet will continue to survey all network jacks in University dormitories and apartments, but will now report any necessary repairs to Video Services. While this project is conducted on a large scale each summer, this relationship will continue during the regular semesters and during winter break.

Consultant Evaluation Program

Over the summer of 2006, ResNet plans to design a database to track evaluation notes and ratings of ResNet consultants. ResNet programmers work under the direction and supervision of LSS Manager Al Vasquez, and will develop the database to meet the requirements established during the 2005-2006 Fiscal Year by the ResNet managers and student supervisors. ResNet plans to implement the consultant evaluation system beginning in September of 2006, and will base continued employment and payraises on consultants' evaluation ratings.

LAN Support Services / ResNet Technical Support

Background

Albert Vasquez
Manager

LAN SUPPORT SERVICES

The mission of LSS (LAN Support Services) is to provide excellent service and solutions tailored to the needs and requirements of University departmental units, to advocate on client departments' behalf in order to improve the integrity of departmental networks and the University network as a whole, and to educate and inform on security issues.

LSS offers free consultation and planning for departmental LAN and firewall implementations in Rutgers University departments. University departmental staff may use these recommendations to implement solutions on their own, or they can hire LSS to perform the implementation and ongoing maintenance for a fee. LSS offers firewall management and design for the University community to ensure that firewalls are deployed according to industry standards and best practices. LSS works with departments' existing infrastructure or recommends replacements for existing firewall infrastructures with advanced technologies that are visible or invisible to the hosts on the network. LSS concentrates primarily on the implementation of firewall technology to increase security and avert risk to University IT resources. LSS has upwards of 7 firewall projects each year, and provides support for over 25 departments at the University throughout the year.

RESIDENTIAL NETWORKING - TECHNICAL SUPPORT

The mission of Residential Networking is to provide excellence in customer service and technical support to the residents of University housing, and to ensure the integrity of the residential network. ResNet Technical Support addresses the network integrity aspect of this mission. ResNet Technical Support is responsible for monitoring the residential networking infrastructure, ensuring the integrity of the residential network, and providing support to the ResNet student staff in resolving difficult technical issues. LSS management works very closely with the ResNet manager to oversee the Residential Network, monitor for problem conditions, and assist in enforcing University acceptable use policies in the residence halls. 8 student campus supervisors along with 13 office staff members provide technical support to over 30 student field consultants in order to support the residential network, resolve technical issues, and address infrastructure problems. ResNet Technical Support also works closely with MSSG to develop updates of ruCompliant, as well as with the Telecommunications Division to ensure that registration on the network goes smoothly each semester. ResNet Technical Support works consistently with the Camden and Newark campuses to keep them abreast of any known problems and fixes, and to include them in the redevelopment of the ResNet registration system. ResNet Technical Support also provides guidance to the Camden and Newark campuses on handling routine problems such as top talker infractions.

LSS

Health Centers Firewall Installations and Network Transitions

LAN Support Services was asked to assist the Hurtado Health Center with implementing a network security plan following a system compromise. The group assisted in the specification and implementation of a network security plan for 3 locations: the Hurtado Health Center on the College Avenue campus, the Busch/Livingston Pharamacy on Livingston campus, and the Willets Health Center on Douglass campus. LSS implemented a pair of Cisco PIX 515 firewalls in failover configuration to help secure the Hurtado Health Center's medical records. The network was also transitioned to private address space, and 5 secure VLANs were constructed based on logical function.

PIX 506E firewalls were installed for the Busch/Livingston Pharmacy and the Willets Health Center. Both locations were moved to private address space, and 2 secure VLANs were constructed at each location based on logical function. LSS also create a secured communication channel to the pharmacy server at the main College Avenue Campus site from both locations. The overall Hurtado Health Center solution improved the security of the health centers' operation and complies with HIPAA regulations.
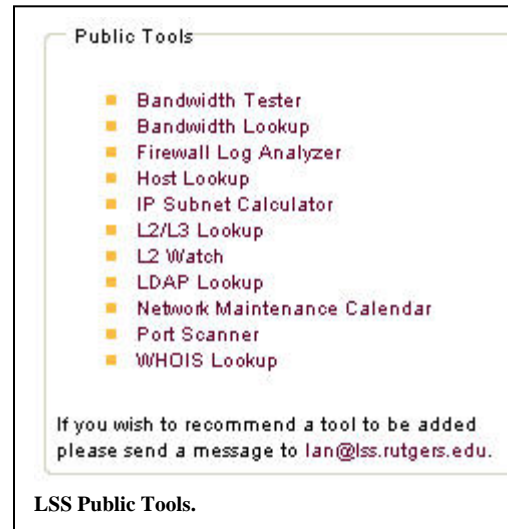
Old Queens Firewall Installation

LSS implemented a firewall for the Old Queens server environment. A solution incorporating a Cisco PIX firewall was implemented to help secure all of the Old Queens servers while a more comprehensive security plan is developed for all of the networks in the Old Queens quad. A pair of Cisco PIX firewall in fail over configuration is schedule to be deployed for the majority of the Old Queens Quad in the summer of 2006.

New LSS Website

During the spring 2005 semester, LSS developed a new website hosting user tools available to both LSS customers and the public. Public tools include a bandwidth tester, a bandwidth lookup tool, a host lookup tool, and various troubleshooting items. Customer tools are available to any customers who have a contract with LSS, and require users to log in using their Rutgers NetID. Tools available to customers include a security vulnerability scanner (Nessus), an unlimited MAC/L2 watch tool, a network surveillance camera server, a network monitor

LSS Public Tools.

(Nagios), an unrestricted port scanner, a method for users to view their own firewalls (current configuration and projects), and a firewall log analyzer. Tools on this web page have been widely used by both NBCS departments and other departments at the University. This page is also being used as a resource for an Information Technology course ("LAN Troubleshooting") at Kent University in Kent, Ohio. The website development facilitates the growth of the LAN group by allowing the group to provide information and services to members of the community, and gather and relay important information with clients.

Please see Appendix 7 (page 89) for LSS website statistics.

RESIDENTIAL NETWORKING – TECHNICAL SUPPORT

New Registration System

In the spring 2005 semester, work began to develop a new registration system for users of the residential network. The old registration system, while functional, presented several

problems. Instead of defining security levels for each user by available function, functions of the system were given a security rating, and users with that rating had access to that function. This often made it difficult to give appropriate access privileges to staff users of the system. The system was difficult to use in that it required support staff to work from a main menu for all functions. Staff was required to always return to the main menu to use another function.

The new system, which was programmed by LSS Systems Programmer Raymond Hu, addressed these flaws, and added additional features for ease of use and functionality. Security levels are definable for every individual and function of the system, making it easy to grant appropriate access to any staff users of the system. Additionally, staff can choose to use a main menu to access any functions of the system, or use a drop down menu to get to any section of the system to which they have access. The system has a staff managers group, which allows managers from various groups (ResNet New Brunswick, Camden, Newark, and the Help Desk) to manage their own staff and staff privileges in the system. The new system allows ResNet staff to set registration start and end dates on a network-by-network basis. The system also boasts a new bulk mail feature that allows staff to send bulk messages to segregated sections of the residential network: university campus (New Brunswick, Newark, Camden), campus (Busch, Livingston, College Avenue, etc.) or building. The system also contains a content management system that allows staff to create web page updates to display for a defined period in time. This is particularly useful when ResNet needs to alert users about important information that is only relevant for a short period of time. Lastly, the new system was developed with RCPIDs as the unique identifier for every registered ResNet user, and was created with a place holder for the new RUID number. Deployment of the new registration system was planned for the fall 2005 semester.

However, further testing of the system was requested, and deployment was pushed to the spring 2006 semester.

Call Scripts Development

In order to provide Help Desk consultants with a better script of basic troubleshooting to address callers' needs, ResNet developed a new set of call scripts. The database backend was a complete redesign from the previous system, and up-to-date information was entered over the course of the semester to prepare for the fall 2005 return of students. Instead of asking simple yes/no questions of consultants using the call scripts, the call scripts provide step-by-step troubleshooting guidelines to help identify points of failure, and offer alternatives to resolving problems that prevent users from registering their computers or passing ruCompliant. In addition to text instructions, the call scripts also provide screen shots of each scenario to help consultants see what users might be looking at on their own computer screens.

Improved Network Diagnostics Tools

In the spring of 2005, ResNet trained the campus supervisors on the proper troubleshooting of network problems using the recently purchased Fluke network tools. It was a priority in ResNet to teach the staff proper troubleshooting techniques so that they are best prepared to handle the various challenges they encounter at ResNet. This year, the Nagios network monitoring system underwent a major software upgrade. The release of Nagios 2.0 provided the group with an opportunity to improve its ability to keep track of the ResNet infrastructure and improve the system. ResNet also took this time to clean up the databases that support the system and improve the overall performance of this system.

Please see Appendix 8 (page 90) for ResNet Nagios statistics.

LSS

Cisco VMS

LSS upgraded its Cisco VMS (VPN (Virtual Private Network) Monitoring and Security) software, which is used for monitoring and analysis of firewall logs. LSS currently has 8 firewall support contracts and expects this service to grow. Firewall support services include log capture and analysis, as well as firewall upgrades and modifications. In order to improve the management of these distributed devices, the group purchased the latest Cisco Works VPN/Security Management Software (VMS). The VMS system hardware and software were upgraded in November 2005, and constitute the primary system used to monitor departmental LANs under LSS contract services. At this time, the focus of the system is log analysis.

EOHSI Secure VPN Server and Firewall

LSS configured a VPN (Virtual Private Network) server in response to a request from EOHSI (Environmental and Occupational Health Sciences Institute) for secure remote access for their mobile user base. This server is integrated with the Cisco PIX firewall and utilizes a VPN accelerator module. This solution uses an algorithm which generates a secure communication channel for up to 2,000 connections.

EOHSI also asked LSS to assist with the development of a network security plan. EOHSI wanted to protect 170 devices on six networks: 15 servers, 15 networked printers, and 140 workstations. LSS presented a recommendation after meeting with EOHSI support staff and discussing the various requirements and expectations of such an investment. Implementation of the recommendation provided the capability to return public addresses and networks back to the University. LSS utilized multiple VLANs to control traffic flow, which further secured the network design. VPN capabilities of the PIX

> **LSS holds contracts with the following University departments:**
>
> ● Bloustein Center for Survey Research
> ● Bloustein Center for Survey Research - NJSAMS
> ● Bloustein School for Planning & Public Policy
> ● Center for Children and Family Services
> ● Graduate and Professional Admissions
> ● NBCS User Services
> ● Old Queens
> ● Residential Networking
> ● Residential Networking - Housing
> ● Rutgers Foundation
> ● Undergraduate Admissions

firewall were implemented for remote connections.

Rutgers University Foundation Secure VPN Server

The Rutgers University Foundation requested secure remote access for systems administration and their mobile user base. LSS configured a VPN (Virtual Private Network) server. This server is integrated with the Cisco PIX firewall utilizing a VPN accelerator module. This solution uses an algorithm which generates a secure communication channel for up to 2,000 connections.

NJAES Secure VPN Server and Firewall

To complement their security strategy, NJAES (New Jersey Agricultural Experiment Station), requested secure remote access for systems administration and their mobile user base. LSS configured a VPN server for the department. This server is integrated with the Cisco PIX firewall utilizing a VPN accelerator module. This solution uses an algorithm which generates a secure communication channel for up to 2,000 connections.

LSS was also asked to develop a security plan for NJAES to protect 105 total devices on three networks: 8 servers, 7 networked printers, and 90 workstations. LSS met with NJAES support staff to discuss the various requirements and expectations of their firewall, and implemented a solution that provided the capability to return public addresses and networks back to the University. Multiple VLANs were used to control traffic flow, further securing the network design. VPN capabilities of the PIX firewall were also implemented to allow remote connections.

New Brunswick Campus Health Centers RUNet Transition

The Hurtado Health Center, the Busch/Livingston Pharmacy, and the Willets Health Center were transitioned to RUNet address space. The logical networks were

transitioned to private address space, and five VLANs were created among the locations that utilize VPN technology for secure communications.

NJAES RUNet Transition
NJAES (New Jersey Agriculture and Experiment Station) relocated from RCE to ASB II. DHCP was implemented to assign hosts IP addresses in the correct RUNet logical address space. All hosts and servers of the department make use of this private address space.

SAS RUNet Transition
A new security design was implemented for SAS (Student Accounting Service) following their move to Lucy Stone Hall. Their Sonicwall firewall was moved and upgraded, new logical networks were created to segment hosts, and DCHP was implemented to assign IP addresses to the department hosts.

UHR RUNet Transition
UHR (University Human Resources) moved from ASB Annex I to ASB II. The department's Symantec firewall was reinstalled in the new server room using a RUNet2000 design model which included creating an inside, outside, and DMZ network. The logical networks were transitioned to RUNet address space where DHCP was implemented to dynamically assign IP addresses.

VanNest Hall RUNet Transition
The four departments residing in VanNest Hall (Undergraduate Admissions, Office of Budget and Resource, Office of Academic Affairs, and Foundations) have been transitioned from the Rutgers legacy network to RUNet2000. New wiring was installed, and the one large network used for all four departments was segmented into four separate logical networks creating a more secure LAN.

Upgrade of Operational Servers
lgradar.rutgers.edu
LSS provides a service to capture and monitor firewall logs from subscribers. This service relies on an extensive process provided by Cisco VMS. The number of subscribers has outgrown the smaller hardware that was purchased to handle log processing. Frequent problems experienced on the smaller hardware included application freezes, dropped HTTP connections, and disk locks. The result of these problems required constant monitoring, cycling of log files, and regular application restarts to allow the process to operate at a normal capacity.

The hardware was upgraded in November 2005 to be sized to an enterprise level server. The new VMS software also allowed for larger log files to be stored on disk, and offers an automatic log backup feature. The multiprocessor server allows for normal application processes to run, while reports, backups, database compressions, and other extensive processes run with little or no impact on performance. This hardware upgrade will enable the firewall log monitoring and log analysis service to grow.

lss-filer.rutgers.edu and Coraid
With the growing demands of electronic storage space to store firewall logs, documents, and backups, LSS implemented an AoE (ATA (Advanced Technology Attachment) over Ethernet) solution for electronic storage. This solution was chosen for cost per byte effectiveness and redundancy, ease of implementation, and ease of scalability. The Coraid array attached to a file-server allows for the central storage of large files to be shared transparently by a number of servers operated by LSS. With the ease and relatively low cost of expanding the storage capacity of the Coraid array, LSS will be able to expand both the number and the maximum age of backups and logs archived on the file server.

lss.rutgers.edu
To help facilitate the growth of LSS, a web sever was deployed to provide both web page functionality and act as security scanner. This allows the group to provide additional information and services to members of the community and gather and relay important information with clients.

RESIDENTIAL NETWORKING – TECHNICAL SUPPORT

ResNet Registration System Deployment
The new ResNet registration system was successfully deployed in January, 2006. Smaller networks were migrated to the registration system for testing during the fall 2005 semester, and minor problems were addressed. The system successfully registered over 13,000 users in the spring 2006 semester, and was used for Senior

Week, summer session, and summer conferences registrations. Long term and short term registrations, as well as NetID and local accounts, were successful.

Troubleshooting Methodology

ResNet Technical Manager Albert Vasquez worked with ResNet student supervisors over the course of this year to improve their troubleshooting methodology. Supervisors were taught to think differently when approaching problems, and to develop tactics and methods for approaching difficult network and computer problems. Instead of seeking answers from individuals who might already have the knowledge to solve the problem, supervisors were taught to seek out their own sources for resolving the problem after taking a step-by-step approach to eliminate known possible points of failure. Supervisors, in turn, hire and train consultants to user proper troubleshooting methodology. This re-education in approaching difficult problems resulted in improved troubleshooting during user appointments, and significantly reduced duplicate appointments for the same user problems over the course of the past year.

Nagios Network Monitor Upgrade

This year, ResNet upgraded the deployment of the Nagios NMS (Network Monitoring System). This system is open source software and recently underwent a major revision upgrade. There are many useful improvements to the user interface

In addition to managing LAN Support Services, LSS Project Manager Albert Vasquez also manages the Residential Networking Technical Support group, where he provides ongoing supervision and support of the ResNet infrastructure for New Brunswick. He also provides support and assistance to ResNet in Camden and Newark.

and the back-end database. In addition to upgrading the Nagios system, ResNet retired the Webmin administration tool due to a compatibility issue with the new system. ResNet currently uses the Groundwork Nagios administration tool, which is vastly superior to the Webmin tool.

Upgrade of Operational Servers

dormonitor.rutgers.edu and Nagios

To monitor the health of the ResNet network, Nagios V2 was installed on faster hardware with the goal to replace the current dormonitor server. Nagios v2 allows for increased functionality and also has a number of third party tools to allow for easy configuration and data analysis.

resnet.rutgers.edu

The resnet.rutgers.edu server was upgraded to new hardware in December, 2005. An entirely new code base replaced the ResNet system deployed one year earlier. This upgrade was required to correct backend problems with the old ResNet system, adopt the new NetDB system, provide additional functionality to the ResNet staff, and make preparations in anticipation of the SSN to RUID change.

resnetbackup.rutgers.edu

In February, 2006, ResNet purchased a server to mirror the primary ResNet server, resnet.rutgers.edu. The new server actively monitors the status of resnet.rutgers.edu in anticipation of a failure. If a failure is detected and resnet.rutgers.edu goes offline, the standby machine will assume the active role. This upgrade is designed to make the ResNet server and the systems running on it highly available. This upgrade also makes server maintenance possible without any service disruptions to users.

Programming Projects

The ResNet Technical Support group provides guidance and leadership to the ResNet student programmers on programming projects that develop resources for ResNet and the NBCS Help Desk. Over the course of the 2005-2006 Fiscal Year, programmers worked to upgrade and maintain the ResNet tools server, Dormaster. Programmers are using Ruby on Rails for this project. Many useful tools are available on Dormaster: a ResNet and Help Desk staff list; an inventory of tools available to ResNet staff, such as switch closet keys, Net Tools Flukes, microscanners, laptops, and an inventory of

minihubs for users; an L1/L2 map; a dorm phone list; and a dorm switch list.

Programmers have also continued working on developing and maintaining call scripts that are used by Help Desk consultants to troubleshoot basic networking problems for users over the phone. Call scripts help guide Help Desk consultants through the basic setup of computers on the ResNet DHCP network, help resolve common problems that prevent users from getting online, and provide a detailed account of what troubleshooting steps have been taken in the event that a call needs to be escalated to the ResNet office staff. Call script development has evolved into a knowledgebase format that may eventually be available for users to troubleshoot some of their own network related problems with regard to registering their computers in the dorms.

Additionally, ResNet programmers are working to implement DotProject in order to track and monitor progress on their programming projects. Programmers also provide ongoing maintenance and support for ResNet and Help Desk payroll tracking.

Summer Housing Projects (Senior Week, Summer Conferences, and Summer Session)

In support of Senior Week, ResNet created ACL (Access Control List) assignments for buildings housing Senior Week participants. ACLs were assigned start and end dates that allowed Senior Week participants in Senior Week buildings to register their computers in their new housing locations, and automatically deregistered them at the end of Senior Week. Additionally, Ray Hu of LSS developed a bulk-add tool that allowed ResNet support staff to bulk assign new housing locations by NetID for Senior Week participants. Although ResNet staff still had to look up NetIDs for every Senior Week participant name and room assignment Housing provided, the staff was able to easily upload participants' NetIDs and housing assignments in bulk for each

building by using the new NetID modify tool. This made the Senior Week housing assignment process considerably easier on the staff, and smoother for Senior Week participants, than it had been in previous years. Over 1,000 users participated in Senior Week and were added to the ResNet system in 1 day.

ResNet also created ACL assignments for summer conferences buildings and summer session buildings. ACLs were assigned start and end dates that would allow summer conference participants and summer session students to register their computers in their assigned housing locations, and be automatically deregistered at the end of the summer, in time for re-registration for the fall 2006 semester.

Improved Network Diagnostics Tools

This year, ResNet purchased new field laptops for the New Brunswick campuses. These units replaced the single 6 year old laptop that had become all but usable over the years. In addition to the laptops, ResNet purchased Network General's Sniffer portable software for the laptops. The combination of the laptops and the Sniffer software will improve troubleshooting and diagnostic accuracy with most difficult problems.

ResNet will train the current student employees on the software in the coming year. ResNet also plans to have an annual training seminar for the staff to keep up their proficiency with the software.

Non-student ResNet Support

During the 2005-2006 Fiscal Year, ResNet contracted with LAN Support Services to support the numerous departments and services that reside in the dormitories. This relationship has worked out very well. As a result of this contract, all ancillary work that is generated by these groups and their services is handled quickly by the team at LSS. LSS has been very helpful and provides useful support services to ResNet.

LSS

The challenge of preserving access to network resources while safeguarding the network at a high level of security has increased as network resources and access to these resources continues to grow. LSS faces the challenge of securing network LANs based on the needs of each individual department. Keeping costs low for its customers while providing them with the technology and tools necessary to keep their network secure is a goal LSS strives to maintain.

Firewall Installations

LSS has contracted and is currently working on firewall installations with University Accounting, Financial Aid, RUConnection, Old Queens, School of Communication Information and Library Sciences, University College, Marine Science, the Bloustein Building, and the Center for Children and Families.

RUNet Tranition

LSS has contracted and is currently working on RUNet transitions with Student Accounting Services in ASB and Records Hall, University Accounting, Financial Aid, and Financial Services.

Risk Assessments

The LSS team met with IPS (Information Protect and Security) to gain insight into the RU Secure risk management process. LSS will use the information from IPS in combination with additional risk assessment processes to develop a thorough assessment for the Rutgers community. LSS will work to offer risk assessments to University departments in the coming months.

Research and Development

Pix Software Version 7.0

LSS will continue to research and test Cisco Pix Version V7.0. This is the latest software available for the Cisco Pix security appliance and offers new functionality, such as virtual firewalls, deeper packet inspection, and zero-downtime software upgrades. If this software is seen fit to deploy to the Rutgers community, LSS hopes to promote the Cisco Pix with V7.0 in a cost savings plan that would require only one firewall per building, therefore substantially reducing the cost of hardware necessary to secure one building.

Technology Research

LSS is looking at other vendor products to stay up-to-date on the latest available security technology. Cisco's next generation Pix, the ASA5500, offers virus protection, anti-spam, and content filtering functionality from TrendMicro in addition to the firewall Pix functionality. LSS is working with Cisco to get an ASA5500 device to test.

LSS is testing McAfee's Intrushield intrusion prevention appliance, which protects against known, zero-day, DoS and encrypted attacks, as well as spyware, malware, botnets, network worms, Trojans, and peer-to-peer applications. This device allows the network administrator to see what traffic is flowing through their network, based on application, and allows the administrator to block desired traffic. LSS is testing the Inturshield 1200 in two separate scenarios.

Additionally, LSS continues to research the Juniper NetScreen 5GT firewall. LSS is looking to recommend security devices to the Rutgers community that provide the best price for functionality. Therefore, LSS strives to stay current on security technology and products.

Building Relationships

As a department that caters to the security needs of the University departmental LANs, LSS is interested in reaching out to the community to better understand the needs and wants of network administrators. LSS plans to formulate a survey to gather input from the community in an organized manner. In hopes to develop better working relations with customers, LSS would also like to hear feedback from the departments where work has been completed. LSS will work to develop forms for customers to provide feedback that will help LSS enhance current work processes.

RESIDENTIAL NETWORKING – TECHNICAL SUPPORT

ResNet Technical Support is working with Housing on assigning 10 and 12 month networks. Housing plans to assign specific

floors or buildings of multi-building apartments to either 10-month contracts or 12-month contracts. ResNet will then segregate the networks accordingly in order to prevent deregistration of 12-month residents during the 10-month resident deregistration periods. This will prevent 12-month residents in buildings such as Rockoff Hall University Apartments from having to register more than once during their 12-month contract with Housing.

Background

The mission of MSSG (Microcomputer Support Services Group) is to inform, support and be an advocate for departments regarding information technology issues at Rutgers.

MSSG provides departmental support services to the faculty and staff of all Rutgers University departments. Services offered by MSSG include free IT consulting and planning, hardware and software configurations and recommendations, software distribution for site licensed products, monthly meetings for the system administrator support group (PC/LAN group), and second level support for Help Desk problem response.

Mary Ann Chianelli
Assoc. Director

MSSG offers free consulting and planning services to the faculty and staff of all Rutgers University departments. With the ever changing horizon of the IT world, it is difficult to keep abreast of the latest technological advances. The MSSG staff is a local resource available to departments to help bridge the technology gap with current, state-of-the-art technology guidance. MSSG offers consulting and planning services in departmental IT planning, and microcomputer hardware, software, and operating system selection.

ruCompliant Wizard 3.0
Created by New Brunswick Computing Services

Welcome to the ruCompliant Wizard

This program will scan your system to make sure that it is running approved antivirus software, it has the latest Microsoft security updates installed, and that it is free from viruses.

NO PERSONAL INFORMATION WILL BE GATHERED BY THIS APPLICATION! It will simply scan for the presence of antivirus software and Microsoft updates and the absence of viruses. This helps to ensure that your system is protected from malicious attacks from the Internet and that it will not be used in malicious attacks against other systems both on and off campus.

To begin scanning your system, click the **Next** button below. To exit this wizard at any time, click the **Exit** button.

For additional help, please visit the following page:
http://resnet.rutgers.edu/rucompliant.php

[Next >] [Cancel]

The ruCompliant program was developed by MSSG to interface with the ResNet registration system to help ensure network security.

Software Portal

The newly implemented software portal handled over 50,000 downloads during the spring 2005 semester. The portal allows downloads of purchased software as well as freeware. Use of the portal requires a NetID login, which will allow users to view only the software that they are eligible to obtain under MSSG's vendor agreements. Eligibility is based upon University classification: student, faculty, or staff. Over 2,200 software orders have been placed using the software portal since January, 2005.

Site Licensed Software Agreement with Adobe

The Site Licensed Software Operation completed a new agreement with Adobe. The agreement provides an improved pricing model for popular Adobe products. In addition, a separate agreement was signed which authorizes the sale of Adobe products to students as well as faculty and staff. Students will see a significant savings over current retail or higher education pricing.

ruQueue

HDRT, the web based trouble ticket software system that was developed in-house by MSSG, was released under an open source license with the name ruQueue. The program was initially developed for the NBCS Help Desk, and is currently utilized by all OIT divisions. It is also being evaluated for use by several other departments and institutions. ruQueue was first announced at the ResNet Symposium in June 2005 by Keri Budnovitch and John Fulton, and was the subject of a presentation by Frank Reda, Mary Ann Chianelli, and John Fulton at the annual Educause conference in October 2005.

ruCompliant

During the summer of 2005, ruCompliant, the application used in the dorms to check for virus software and operating system patch compliance, was rewritten to add new enhancements and to interface with the new ResNet registration system. The new version or ruCompliant was extremely successful and resulted in fewer problem calls to the Help Desk relating to compliance.

Rutgers Scarlet Page

The RSPS (Rutgers Scarlet Page Service) is a service provided by MSSG to enhance system, software, and patch management for computer systems within the Rutgers enterprise. The main focus of the RSPS is providing patch management via Windows Server Update Services. Additional functionality to perform inventory scanning, centralized system administration, and integration with the Rutgers University Software Portal is being developed.

Currently, RSPS includes a managed version of WSUS (Windows Server Update Services) which allows systems to be automatically updated with the latest patches after they have been tested by MSSG. RSPS supports approximately 20,000 clients for RADS (Rutgers Antivirus Detection System) and has detected and cleaned over 6 million infections to date. Scarlet page offers a small, lightweight client that runs as a service and updates itself when necessary, making it painless to add new features such as inventory and software deployment. The RSPS website (http://scarletpage.rutgers.edu/) is continually updated with information about upcoming changes, downtime, and approved patches.

OIT Technology Meetings

The first monthly meeting of the new OIT Technology meeting was held in September, 2005. This meeting combines the PC/LAN and OIRT technology meetings. The meeting format features announcements and several short presentations, followed by breakout sessions. The presentations are on technical topics of interest to the technology support community. Presentations are given by volunteers from the group who offer to share their knowledge and experience with the group. This new format was developed from feedback obtained from a group survey that was conducted over the summer.

John Lennon Educational Tour Bus

On Saturday, September 17th, MSSG hosted a John Lennon Educational Tour Bus visit at Rutgers University. The bus is sponsored by Apple, Maxell Corporation and several other vendors. It is a non-profit, mobile, professional recording and multimedia studio. The event took place on Douglass campus in front of the Nicholas Music Center. This was an opportunity for students to tour the studio, try out some of the state of the art recording tools, and learn from the expertise of the engineers on board the mobile studio.

UCS Toolkit

MSSG successfully coordinated the development of the UCS Toolkit. The Toolkit is an online collaborative list of resources targeted for UCSes (Unit Computing Specialists) and UCMs (Unit Computing Managers). The technical resources contained in the Toolkit provide a single point of reference for mailing lists, software, hardware, and technical instructions that are specific to their job function at the University. The UCS Toolkit complements the ITCP classes: technical information discussed in the classes can be referenced on the UCS Toolkit website.

Software Portal

The MSSG software portal handled over 179,165 downloads during the 2005-2006 Fiscal Year. The Microsoft Academic Student Select agreement was signed, enabling students, faculty, and staff to purchase Microsoft Office Pro 2003, Office Pro MAC 2004, Windows XP
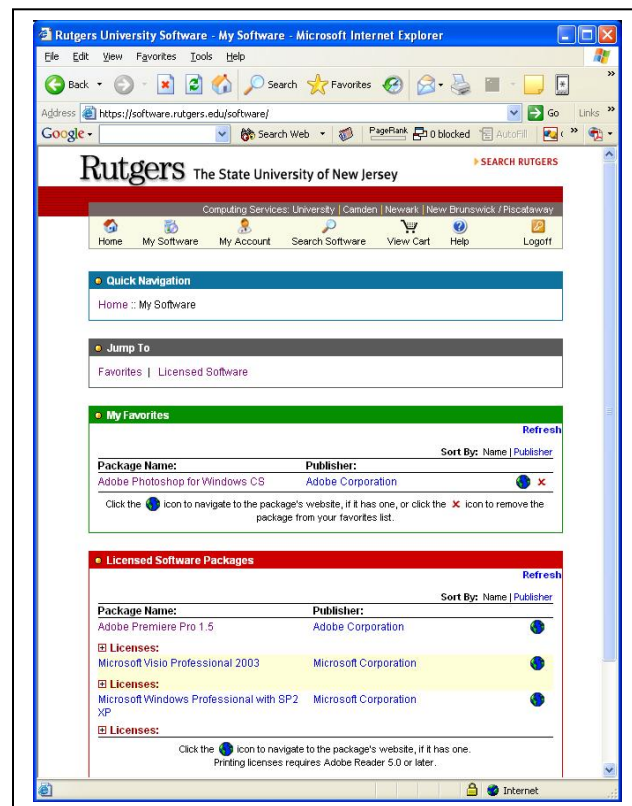
Pro Upgrade with Service Pack 2, OneNote 2003, and MS Student 2006 at below academic retail pricing for installation and use on personal home use. These products will be flagged "For personal use only" on the University Software Portal.

With the renewal of the SAS Statistical Software agreement, SAS 9.1.3 will be available for personal computers running Linux, in addition to SAS 8.2 and 9.1.3, currently offered for personal computers running Windows. SAS 6.12 renewals will continue to be available for Macintosh. The new SAS Education Analytic Suite now includes the "Enterprise Guide." SAS is available for students, faculty, and staff for use on University equipment or personally owned equipment.

Final negations with Thomson ResearchSoft are underway. Once negotiations are finalized, MSSG will add EndNote 9 School Edition for Windows and Macintosh for faculty and staff, in addition to EndNote 9 Student Edition for Windows and Macintosh for students below academic retail pricing.

Software Portal	
Orders Processed	2,013
Licenses Sold	10,287
Media Sold	1,670
Dowloads	65,539
Products Added	22

The Software Operation is in the process of a marketing campaign to increasing awareness of the University Software Portal (https://software.rutgers.edu/). The portal highlights free software and discounted software for students, faculty, and staff. For added purchasing convenience for University faculty and staff, the MSSG Site Licensed Software operation is an internal RIAS supplier vendor, enabling faculty and staff to download their software purchase via ISO or DMG images.

MSSG's Software Operation is continually looking for new software products to add to their offerings. In the coming year, MSSG will work to increase their software offerings for students. Adobe Creative Suite 2 was added to the software portal for students as a pre-order item to determine what the response for this package will be.

Data Backup Contracts
Starting in March, 2004, MSSG contracted with departments to offer a centralized implementation of NetBackup. NetBackup is a tool that allows centralized data backup of various servers. Data is backed up to both disk and tape offsite. MSSG backs up a total of 38 servers, 2 Exchange databases, and 2 SQL databases for 10 of its contracted departments. The NetBackup service offers the UCS the ability to initiate data restores and allows the backups to attach to machines that reside behind firewalls.

IT Vendor Fair
On March 8, 2006, MSSG held the OIT vendor fair at the Busch Campus Center. Hundreds of students, faculty, and staff attended to meet the 26 vendors that provide services to the Rutgers community. Hourly drawings were held for door prizes, including digital cameras, Apple iPods, software, and a Dell laptop computer. Vendors were given the opportunity to hold various breakout sessions to further highlight their companies' products and services in a more intimate atmosphere.

Antivirus Management
MSSG currently manages 27,164 RADS (Rutgers Antivirus Delivery Service) clients reporting to MSSG's antivirus server. RADS cleaned over 16,000,000 infected files on those systems in the Fiscal Year.

Please see Appendix 9 (page 91) for MSSG's antivirus solution evaluation and RADS virus remediation statistics.

For the past several years, Rutgers contracted with McAfee, Inc. to provide free antivirus software to any member of the Rutgers community. This contract expired on June 30, 2006. As a part of MSSG's ongoing commitment to provide the best services to the University community, MSSG, along with volunteers throughout the University, evaluated the effectiveness of McAfee and compared it to what competing antivirus vendors have offer. During this evaluation, MSSG reviewed products from Trend Micro, Symantec, Sophos, and F-Secure. As a result of this evaluation, MSSG determined that Trend Micro will provide the Rutgers community with better protection against viruses, trojans, and malware. The new software includes built-in anti-spyware

capabilities, eliminating the need for other programs such as Ad Aware and SpyBot. A desktop firewall is also included to better protect Windows 2000 or later systems. Furthermore, MSSG also licensed anti-spam software so that system administrators can better eliminate spam. Trend Micro also supports Windows 95/98/ME, which McAfee stopped supporting in July of 2005. The new software package includes antivirus software for Linux systems, so those users can also benefit from a supported solution.

<div style="border:1px solid blue; background:blue; color:yellow; padding:1em;">

MSSG Projects, 2005-2006

▫ Completion of Hurtado Health Center network and server migrations
▫ IT recruitment and hiring consultations for Health Services and University College
▫ Hardware considerations and application development for the Center for Children & Families. Provided technical support and assisted in a multi-year, multi-million dollar project to set up three training centers throughout the state that will be used to train new employees of various state and local agencies involved in children's services.
▫ MSSG PR campaign for MSSG services and University site licensed software, including printed brochures, handouts, and promotional items.
▫ Collaborated with ESS to roll out a new secure terminal emulator for mainframes (QWS3270).
▫ Netbackup: 40 clients backed up. Continuing to add additional support and streamline backup and recovery for Linux systems.

</div>

Auxiliary Technical Support Services

MSSG manages approximately 80 servers, including Windows, Linux, and Netware, in Hill Center and at University departments, and hosts over 40 web sites and applications via their auxiliary technical support services operation. The group provides the primary technical support for 18 departments and over 450 users. The group provides 19.5 work days of support per week on annual contracts, and provides over

Auxiliary Technical Contracts

10	Web hosting contracts
10	Server hosting contracts
8	Concurrent programming contracts
19	Technical support contracts
38	Servers for backup services
1.25	Terabytes of data per week

50 hours of hourly work to departments on an as-needed basis. This year, the auxiliary support operation expanded its support of Linux and Mac OS, and also added support for UNIX. 16 annual technical support contracts were renewed this year to departments who contracted for additional time, and two new departments established annual contracts with MSSG.

MSSG Web Programming Team

The MSSG web team hired three Full time programmers and three part time programmers this year. The web team began 12 new projects during the 2005-2006 Fiscal Year. The team worked six days per week in annual web or programming contracts, and is working on eight multi-year web or programming projects.

Jane Voorhees Zimmerli Museum Website

The Jane Voorhees Zimmerli Art Museum is one of the largest university art museums in the country. It houses a rich, diverse collection of over 50,000 works of art. MSSG undertook the project of completely redesigning the Zimmerli's website in order to provide a more modern and artistic look to the museum's web presence. The new site features a calendar of events, an exhibition and collections catalog, and a dynamically generated Flash homepage.

All of the continually changing data on the website is controlled by a CMS (Content Management System) developed by MSSG. Through this CMS, museum staff can add events to the calendar, create exhibits for the online catalog, and upload images of art pieces.

This project not only features web programming, but also features the creative and design capabilities of the group.

Dining Services Meal Sign-Away

Meals on a student account can be signed away for various events. This includes barbecues, lunches, and social events. Meals can also be donated to certain programs. The sign-away system currently involves machine entry of the sign-away at the entrance of the dining halls and paper sheets listing student ID numbers. The machine entry is constrained by the number of buttons on the machine, and can only handle a small number of events. The paper version must be re-entered and checked for validity.

MSSG is working on a project to create a web based sign-away system for Dining Services during the spring 2006 semester. This system will allow students to log in to a web site and view the items for which they can sign meals away. By selecting items in the list, a record will be taken to debit their account. The system will also check that the student has enough meals to sign away. This project will go into production in the fall 2006 semester.

This system decreases the amount of manual data entry involved in signing away a meal, makes it easier for the student to sign away for meals from any location, allows administrators to quickly add events from a web interface, and increases students' security.

Budget Challenges

The challenges that face MSSG for Fiscal Year 2006-2007 revolve around the state budget cuts and how they will affect auxiliary operations. It is difficult to predict whether there will be more work due to departmental layoffs, or less work due to less discretionary budgets. While it is still unclear how budget cuts will affect the work already planned for the 2006-2007 year, it is clear that some projects will be put on hold unless funding can be identified.

Microsoft Campus Agreement

A proposal put forward as part of the budget cut process was to implement a University-wide Campus Agreement with Microsoft for faculty and staff. This agreement would be a significant cost saving to the University. The details of the agreement are currently being reviewed and will be presented to the administration. While the benefits are evident, the agreement would result in a downside for the Site License Operation, and would create a deficit which would have to be covered through more aggressive pricing and the addition of new products.

University Exchange Service

The Microsoft Campus Agreement, if implemented, will create an opportunity for MSSG to develop and offer a University Exchange Service; the required Exchange client access licenses are covered by the agreement. The Exchange Service would be offered as an opt-in service to the University community, allowing units currently running their own Exchange servers to have the option to use the central service to save the cost of their local servers.

PR Plan for Auxiliary Services

In the coming year, MSSG plans to advertise the auxiliary technical support services and hopes to add additional annual contracts. The group also plans to build a high availability infrastructure for its web and server hosting services in response to the growth of this operation. MSSG has plans to develop an online portfolio of completed projects, to create a new maintenance contract for completed projects, and to set up a revision control system to create a repository for completed projects and code reuse. There has been feedback that MSSG's services are not widely known. To address this issue, a communication/advertising plan will be developed this coming year to publicize the services in a more consistent manner that will reach a broader audience.

Infrastructure Upgrade

MSSG's Auxiliary Technical Services is planning to upgrade the infrastructure for its web and server hosting services in response to the growth of this operation. Many departments are taking advantage of these services and it is critical to maintain the infrastructure to support this increase in business and to ensure the highest level of service.

MSSG Website

This coming year, MSSG plans to work on upgrading the content of its website, reviewing the navigation flow, and improving the user interface to its services.

Web Programming Team Portfolio

As the Web Team matures and the projects become larger and more complex, it is apparent that it is time to develop an online portfolio for prospective clients to reference. A website with the beginnings of this project is already in place. Over the course of this year, the Web Team hopes to complete the portfolio and utilize it as part of the advertising campaign.

Additionally, MSSG plans to create a training programming group in ASP.NET using C#. The MSSG programming group received formal training in Use Case documentation writing, requirements gathering, and project management.

Maintenance Contracts

With a sizeable list of completed projects now under its belt, the Web Team will be offering a new type of service to cover maintenance on existing projects. The details and types of options will be worked on and finalized over the course of this year.

Background

Roger Williams
Manager

The Old Queens Technical Support Team's mission is to provide leadership in technology and excellence in customer service to the Old Queens Quad users.

The OQTST (Old Queens Technical Support Team) supports and assists Rutgers University's administration, located in the Old Queens Quad, by offering an ample array of latest technologies with unsurpassed attention to detail and customer service. The team currently supports the computing needs of several departments across 4 buildings: 130 workstations, 15 servers, 20 shared network printers and 104 users. The buildings and departments the OQTST supports are Winants Hall, the Office of State Relations, the Office of the Secretary, University Counsel, Van Nest Hall, the Office of Student Affairs, Geology Hall, the Office of Institutional Research and Planning, the Office of Academic Affairs, the Old Queens Building, the Office of the President, the Office of the Secretary, the Office of Academic Affairs, the Office of Continuing Education and Outreach (in conjunction with Continuous Education's technical support), the Office of the Treasurer, the Office of Budgeting, the Office of University Relations, the Office of Institutional Research and Planning Work (in conjunction with the Office of University Relations), and the Presidential Residence. Two satellite offices of Rutgers University are the Office of Government Relations in Washington D.C., and the Office of State Relations in Trenton.

The OQTST provides A/V support for the BOG (Board of Governors) and the BOT (Board of Trustees) presentations, including support for projectors, screens, laptops, and any necessary technical support. The team also provides file and print sharing for the departments, as well as email, BlackBerry services, Right Fax services, FileMaker Pro services, and a dedicated Help Desk for the Old Queens community.

Power Maintenance

The OQTST successfully provided support during power maintenance work in the Old Queens Quad between December, 2004 and January 2005. Old Queens users experienced no disruptions during this work. This power outage affected the College Avenue Campus and the Old Queens Quad. The OQTST notified their users and worked closely with Facilities in order to minimize the effect on day-to-day business.

Old Queens Computer Replacement

The computer replacement that began in July, 2005 was successfully completed during the spring 2005 semester. Machines from the July/August replacement began to fail, and the OQTST replaced 33 machines with minimum user disruption.

Office of the Secretary Fax/Scanning Solution Upgrade

The Office of the Secretary received a new version of OCR software to complement the Right Fax/Scanning solution. The OQTST purchased, installed, and configured the software, which improved the quality and volume of scanned materials.

Administrative Affairs Budget Request

The OQTST worked closely with the office of Administrative Affairs to reach all departments in the Old Queens Quad to collect needed operational funds for the 2005-2006 Fiscal Year. A budget request for the 2005-2006 Fiscal Year was successfully revised and implemented.

Windows Servers Upgrade

All Windows servers except for two Novell servers, were successfully upgraded to Windows Server 2003 during the spring 2005 semester.

Improved and Secured Network Infrastructure

The OQTST worked with LAN Support Services and MSSG to implement a temporary firewall solution and moved most of the Old Queens infrastructure behind that firewall. In the fall of 2005, work began to move the Old Queens Quad (Winants Hall, Geology Hall, Old Queens, and Van Nest Hall) behind a firewall. Once the new secured network structure was in place, the OQTST prepared elaborate schematics detailing the logical and physical locations of the newly deployed OQD (Old Queens Domain).

Geology Hall

The OQTST planned, designed, and successfully executed the construction of a new server room within Geology Hall Room 001. The team successfully planned and executed the move of all server equipment from room 003 to the new server room with minimal downtime. The team also installed a Temperature Monitoring Alert System within the OQTST server rack to track and record temperatures of the critical server systems. This system will send alerts if the room temperature increases beyond a safe zone, so that action can be taken by the support staff. In conjunction with the Telecommunications Division, the OQTST successfully completed re-wiring Geology Hall, bringing the building up to RUNet standards.

Mobile Device Support and Configuration

The OQTST continued to deploy mobile devices this year. The majority of mobile devices were BlackBerry RIM 7290 Handhelds for the Office of the President and other Vice Presidential staff. Additionally, the team maintained the BlackBerry Enterprise server.

In the spring of 2006, the OQTST began to test the new Palm Treo 700w Smartphone. After extensive internal testing, use, and comparison to the BlackBerry unit, the team decided that the Smartphone was the better overall mobile device. The first Treo unit was deployed in the spring, and the Vice President was exceptionally pleased with the unit. Work is now underway to look at a migration from the BlackBerry units to the Palm Smartphone.

Novell Server Auditing

The OQTST installed AuditLog by Condrey Consulting Corporation on all three of the Novell servers to track logins and access to the servers.

Geology Hall.

Van Nest Transition

The OQTST worked with LSS to transition Van Nest Hall from public address space to private address space. This work was in anticipation of moving the entire Quad to private address space, which is protected by a firewall.

New Leadership

The Old Queens Technical Support Team experienced the challenge of new leadership twice during the 2005-2006 Fiscal Year. Oscar Insua, who managed the group for 5 years, left the group in the spring, 2006 semester. Timothy Mills of MSSG served as Acting Manager of the group from February to June, 2006, and Roger Williams was hired as the new Manager of User Services for the OQTST effective June 12, 2006.

After completing the computer replacement process and the infrastructure upgrade in the coming year, one of Roger's goals for the Old Queens Quad is to streamline the way end users obtain assistance from the OQTST. This will enable the team to better track hardware failure statistics and problematic applications, and to possibly implement an internal knowledge base that end-users can access.

Increased Services

One of the major challenges the Old Queens Technical Support Team faces is the ever growing list of services provided to its users. These services include faxing, scanning, mobile services including Treo and Blackberry services, File Maker Pro, and presentation support. The addition of services requires new equipment, new skill sets, and more time and attention to the new hardware and software. This year, the group accomplished all of this with the same staffing level, and no discontinuation of existing service or support. Old Queen's users have come to expect the highest level of service, and it becomes difficult when the team is being pulled in so many directions. The need for an additional person for the team is becoming an imminent necessity.

BlackBerry RIM to Palm Treo Smartphone Transition

In order to support RIM (Research in Motion) BlackBerrys, the OQTST must run a dedicated server and BlackBerry Enterprise Server software. The team will look at the cost savings of migrating from BlackBerry to Treo services, which uses native Exchange Active synchronization and does not require a separate server and software.

Old Queens Quad Network Transition

The OQTST will transition all address space in the Old Queens Quad to internal Rutgers University addresses. The team will work with DCEO (the Division of Continuing Education and Outreach) to allow videoconferencing to externally routable IP space.

Novell to Windows Migration Phase 1

In Phase 1 of the Novell to Windows migration, the team plans to migrate all workstations into the OQD to leverage Active Directory and reduce dependencies on the Novell Directory Service. The current Novell file, print, and directory services were in service for a number of years. In Phase 2 of the migration, the team will plan the migration from Novell to Windows file based services, including Active Directory for Directory Services. The team plans to phase out Novell infrastructure.

Cisco Firewall and RPC over HTTPS

During the 2006-2007 Fiscal Year, in conjunction with LSS and MSSG, the team plans to deploy a Cisco firewall to cover the entire Old Queens Quad. The group will create VPN sessions to allow home users full Outlook connectivity, and will look at RPC (Remote Procedure Call) over HTTPS. The team also plans to deploy a Cisco firewall at the Washington D.C. office to treat that location as a remote office. Currently, each workstation in the Washington D.C. office needs a VPN connection. The deployment of the firewall will make the Washington D.C. subnet a part of the OQ network.

Security Audit by LSS

LSS is being tasked with a Risk Assessment security audit of the Old Queens Quad. The objective of this assessment is to harden Old Queens' current infrastructure and to add defense in depth to the current security strategies.

2006 CCF Satisfaction Survey
Executive Summary

The goal of Campus Computing Facilities is to increase the user satisfaction by creating a friendlier environment in the labs and the University for work and study.

The CCF Satisfaction Survey was an online survey conducted to gauge the quality of services offered by CCF. Information was gathered from 2755 submissions over a three-week period from April 3 to April 25, 2006. The survey was advertised on the CCF website and via signs posted in the labs.

General Lab questions:
- 94% of respondents reported the level of customer service in the labs as being satisfactory or better.
- 97% of respondents reported generally being able to get an available computer in less than 10 minutes.
- 93% of respondents reported that academic use was on of their primary reasons for using the labs.
- 54% of respondents reported that printing is one of their primary reasons for using the lab.
- 80% of respondents reported being satisfied with the current software offered.
- 93% of respondents found the print stations to be at least somewhat helpful.
- 86% of respondents reported being able to collect their print jobs in 5 minutes or less.

Wireless questions:
- 1971 respondents answered wireless questions.
- 17% of these respondents would like to see wireless access in the dorms in general. 12% want coverage in all classrooms, everywhere, in all buildings, or in all open/outside areas. Several other classroom buildings were mentioned by name.

1. Describe your status with the university:

Status	Count
Undergrad	2456
Graduate	261
Other	17
Staff	15
Faculty	5

2. Which CCF lab do you frequent the most?

Lab	Count
ARC	846
Records Hall	438
Loree	284
C4	284
Tillett	266
RSC	197
Dcent	127
Dlib	116
Kilmer	91
Alex-G	77
Satellite	77
LSM	69
LLC	10
DML	6

3. What are your primary reasons for using the computer labs?

Reason	Count
Academic	2571
Printing	1477
Non-academic	923
Student Organization	319
Class in lab	184
Other	33

4. Overall, do you feel the consultant staff is approachable?

Response	Count
Yes	2240
No	75
Neutral	440

5. In the last semester, how often have you asked a lab consultant for assistance?

Frequency	Count
Often	111
Occasionally	947
Rarely	1277
Never	420
No answer	0

6. How would you rate the customer service provided by the staff?

Rating	Count
Excellent	447
Very Good	947
Good	831
Satisfactory	325
Poor	40
N/A	138

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7. How would you rate the technical ability of the staff?

Excellent	Very Good	Good	Satisfactory	Poor	N/A
329	936	789	344	58	299

8. On average, the waiting time to use a computer is:

Never had a wait	Under 10 min	10-30 min	Over 30 min
811	1710	216	18

9. On average, the wait time to use a computer that I have experienced is:

Too Long	Reasonable	Negligable	No Wait
153	1242	549	811

10. On average, the waiting time to collect a print job is:

never printed	under 1 min	1-5 min	5-10 min	over 10 minutes
26	783	1587	300	59

11. On average, the wait time for print jobs that I have experienced is:

Too Long	Reasonable	Negligable
315	1845	510

12. What is your opinion of the print release stations?

Very helpful	Helpful:	Somewhat Helpful	Not Helpful	Have not used
852	1147	555	127	74

13. Are you satisfied with the current software offered in the lab?

Response	Count
Yes	2192
No	190
Neutral	373

14. Please list additional software you would like to suggest for the labs. You may also explain why your software suggestion(s) should be offered in the labs.

15. How would you rate the quality of the facility you are currently using (layout, equipment, etc)?

Rating	Count
Excellent	691
Very Good	1396
Good	546
Satisfactory	118
Poor	4

16. How would you rate your overall experience in the computer labs?

Rating	Count
Excellent	691
Very Good	1396
Good	546
Satisfactory	118
Poor	4
No answer	0

CCF offers printing at all of its computer labs. The following charts show printing statistics, by campus, during Fiscal Year 2004-2005 and Fiscal Year 2005-2006.

Pharos Uniprint software was installed at the CCF labs in September, 2004. The following chart shows the total pages printed at all CCF labs, by year and month, since the installation of Uniprint.

CCF Printing History Since Uniprint Installation

	January	February	March	April	May	June	July	August	September	October	November	December
2006	2,117,571	3,213,929	2,910,565	3,451,078	1,496,267	693,769						
2005	1,631,468	2,872,789	2,490,706	3,073,051	1,399,236	768,249	934,931	849,659	3,451,140	3,208,098	2,666,615	2,263,120
2004									2,138,909	3,228,646	3,007,649	2,359,865
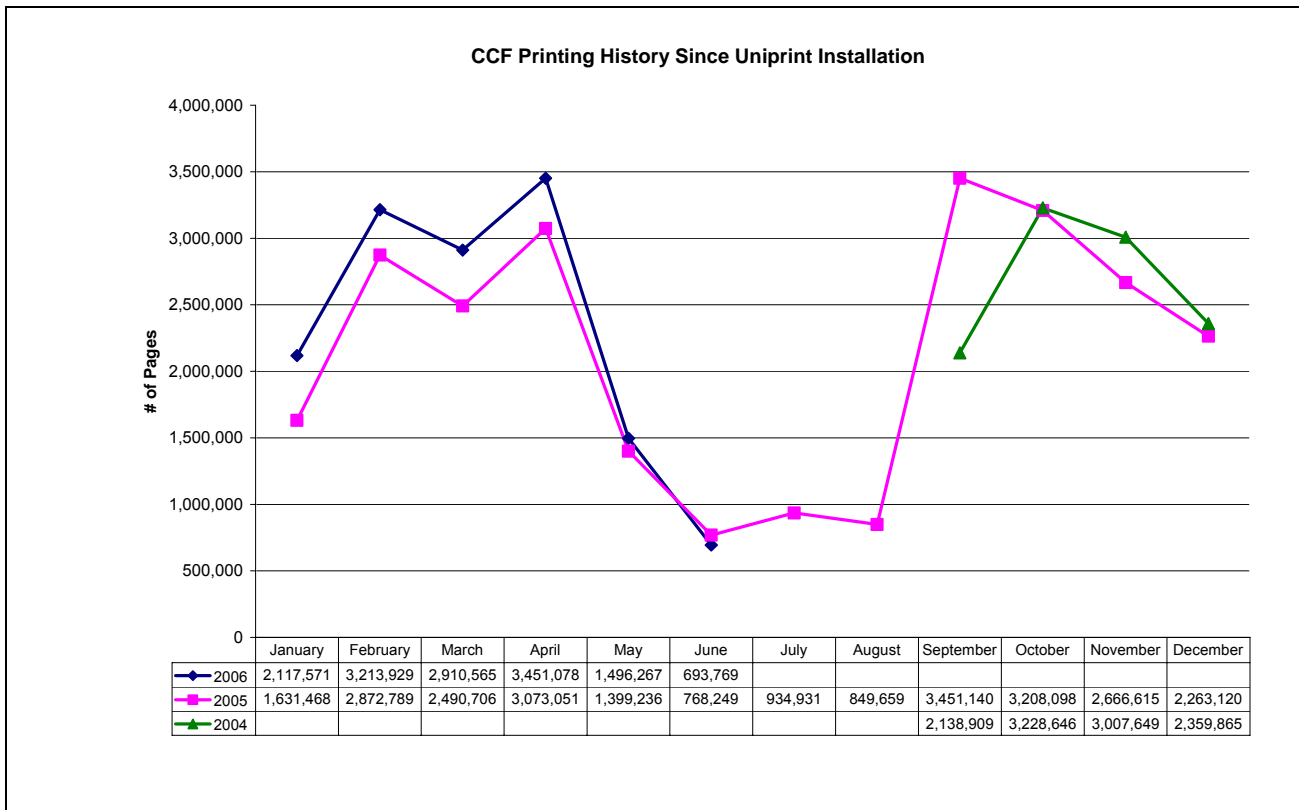
Appendix 3: CCF IML Usage Statistics

CCF IMLs (Instructional Microcomputer Labs) are a valuable resource to academic departments throughout the University. The following charts show IML usage statistics for the 4 CCF campuses during the spring semester, 2005, and Fiscal Year 2005-2006.

CCF IML Usage Hours By Campus, January 2005-June 2005

	January	February	March	April	May	June
Busch	75	92	94	72	7	95
College Ave	34	108	120	120	18	127
Cook/Douglass	11	63	93	32	3	21
Livingston	18	95	81	76	2	82

CCF IML Usage Hours By Campus, July 2005- June 2006

	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June
Busch	40	49	114	100	106	28	48	97	126	164	31	91
College Ave	14	59	107	134	144	46	42	85	94	80	10	99
Cook/Douglass	29	2	26	46	48	2	35	69	76	30	0	4
Livingston	224	68	68	34	39	15	38	87	74	84	1	106

Total CCF IML Usage Hours, January 2005-June 2006

	Jan 05	Feb 05	Mar 05	Apr 05	May 05	June 05	July 05	Aug 05	Sep 05	Oct 05	Nov 05	Dec 05	Jan 06	Feb 06	Mar 06	Apr 06	May 06	June 05
Total	138	358	394	307	30	325	308	177	315	314	337	90	164	338	370	357	41	300

RUWireless is offered at many locations throughout the University (see pages 12 and 17). The following charts show the number of unique users and the number of logins, by month, into RUWirless during Fiscal Year 2004-2005 and Fiscal Year 2005-2006.

Unique RUWireless Users By Month
Monthly Comparison Between Fiscal Year 2005 and Fiscal Year 2006

	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	Apr	May	June
FY0405	700	700	2,072	2,598	2,825	2,841	1,898	3,131	3,375	3,999	2,946	1,427
FY0506	1,328	1,686	4,665	5,679	5,765	5,879	4,087	6,156	6,715	7,666	5,224	2,510

RUWireless Logins By Month
Monthly Comparison Between Fiscal Year 2005 and Fiscal Year 2006

	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	Apr	May	June
FY0405	3,607	3,037	11,537	14,073	14,595	13,423	7,738	16,466	17,224	21,768	11,906	6,631
FY0506	6,498	8,154	28,065	35,674	34,026	31,083	19,895	39,265	39,784	51,632	23,266	14,579

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RCI Email Delivery Statistics, 2005-2006

	July 2005	August 2005	September 2005	October 2005	November 2005	December 2005
Local Deliveries	5,304,946	4,810,639	5,632,564	5,812,824	5,702,321	7,101,364
Remote Deliveries	3,149,343	2,886,067	3,801,222	3,570,231	3,419,559	4,584,824

	January 2006	February 2006	March 2006	April 2006	May 2006	June 2006
Local Deliveries	8,143,559	7,623,760	9,008,767	8,649,327	7,880,836	8,350,708
Remote Deliveries	6,170,296	5896129	6,152,821	5,508,475	4,395,034	5,702,617

Total Local Deliveries: 84,021,615 messages
Total Remote Deliveries: 55,236,618 messages

Note: All inbound and outbound RCI email is processed through Spam and Anti-Virus servers.

RCI User Account Types

- Faculty/Staff
- Miscellaneous
- Guest
- Become

Miscellaneous, 575, 4%
Guest, 742, 5%
Become, 933, 6%
Faculty/Staff, 12,421, 85%

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Eden Email Delivery Statistics, 2005-2006

Number of Email Messages Delivered

	July 2005	August 2005	September 2005	October 2005	November 2005	December 2005
Local Deliveries	56,993,825	52,899,975	41,411,285	42,959,494	42,678,766	46,711,821
Remote Deliveries	57,465,962	53,497,395	42,733,396	44,323,275	44,220,071	48,577,886

Nubmer of Email Messages Delivered

	January 2006	February 2006	March 2006	April 2006	May 2006	June 2006
Local Deliveries	42,385,545	42,838,051	49,018,125	50,992,316	50,327,949	48,460,328
Remote Deliveries	43,625,980	44,585,338	50,497,335	51,784,607	50,751,468	49,589,102

Total Local Deliveries: 591,187,099
Total Remote Deliveries: 605,553,569
Note: All inbound and outbound RCI email is processed through Spam and Anti-Virus servers.

Eden User Account Types

Miscellaneous, 461, 1%
Guest, 312, 1%
Alumni, 7,029, 15%
UMDNJ, 94, 0%
Student, 38,714, 83%

Legend:
- Alumni
- UMDNJ
- Student
- Miscellaneous
- Guest
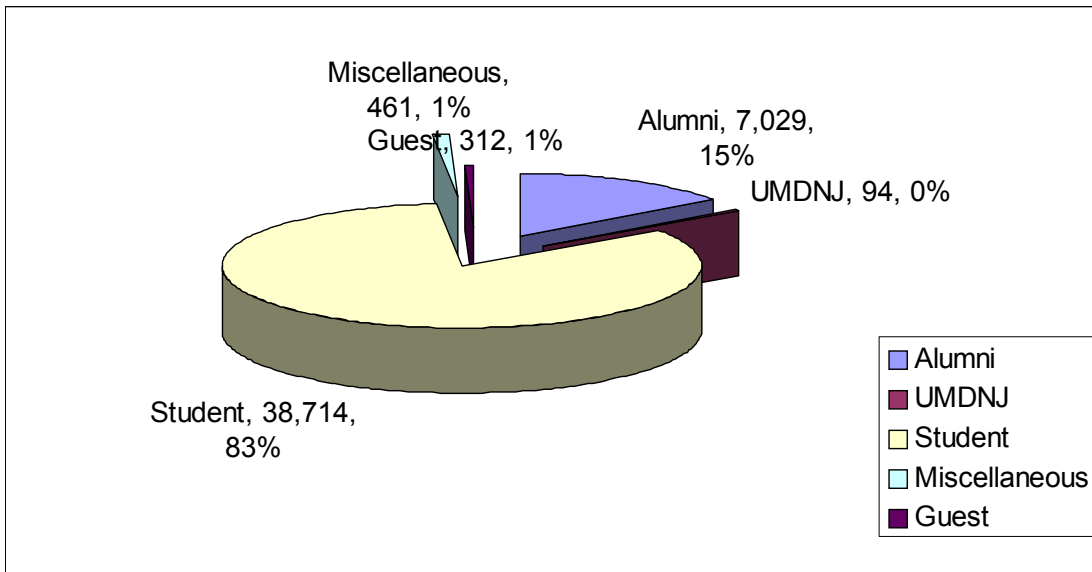
Phone Statistics

The NBCS Help Desk received 50,763 calls from July, 2005 through June, 2006. 10,259 calls were received in August, 2005 and 7,566 calls were received in September, 2005. This represents the back-to-school period for fall 2005. In January, 2006 the Help Desk received 8,277 calls which represent the spring 2006 move in period.

Incoming Telephone Calls
July 2005 - June 2006

	Jul-2005	Aug-2005	Sep-2005	Oct-2005	Nov-2005	Dec-2005	Jan-2006	Feb-2006	Mar-2006	Apr-2006	May-2006	Jun-2006
Number Of Calls	1,719	10,259	7,566	3,295	2,443	2,568	8,277	2,947	2,997	2,666	2,871	3,155

Telephone Calls By Skillset July 2005 - June 2006

Fac/Staff 8,639 17%
RIAS 1,297 3%
Network 24,413 49%
General 15,171 31%

- Network
- General
- Fac/Staff
- RIAS

Breakdown of Help Desk calls by skillset. ResNet calls are contained in the General and Network categories. Over 50% of calls received are related to Residential Networking support.

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HDRT Statistics

All calls that come into the Help Desk are entered into HDRT.   From July 2005 through June 2006, 47,469 new tickets were created and 47,138 tickets were resolved.

HDRT New Tickets By Month

Month	Created
Jul-05	**2,147**
Aug-05	**6,083**
Sep-05	**5,694**
Oct-05	**3,013**
Nov-05	**2,430**
Dec-05	**2,526**
Jan-06	**6,257**
Feb-06	**3,043**
Mar-06	**3,135**
Apr-06	**2,665**
May-06	**5,843**
Jun-06	**4,633**
Total Fiscal Year 2005-2006	**47,469**

HDRT Tickets By Month
For Fiscal Year 2005-2006

	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06
Created	2,147	6,083	5,694	3,013	2,430	2,526	6,257	3,043	3,135	2,665	5,843	4,633
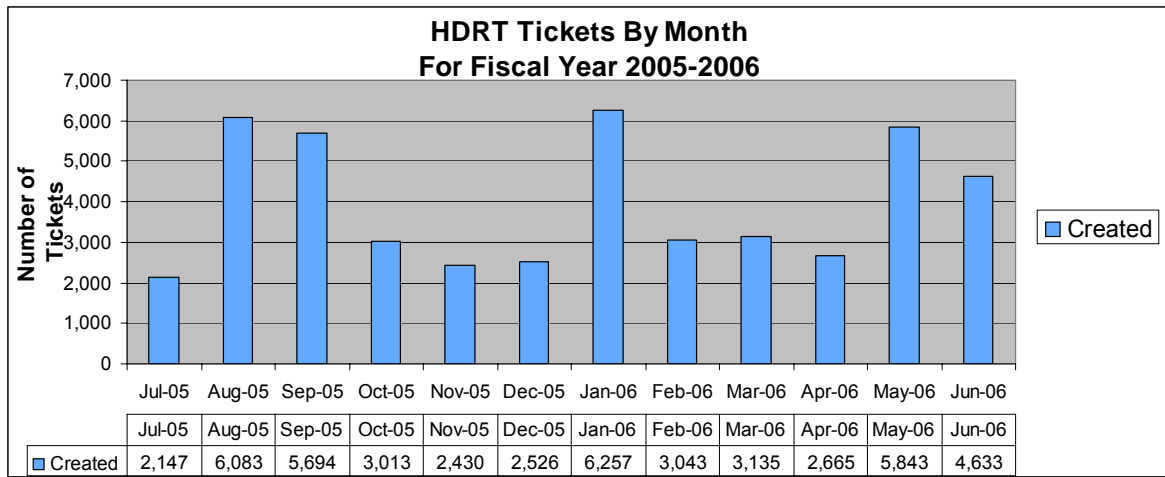
HDRT Survey Responses

When a ticket is resolved HDRT, an e-mail is sent to the user for whom the ticket was created asking them to fill out a user satisfaction survey. The following 3 pages show a breakdown of the questions contained in this survey and users' responses.

How did you contact the Help Desk?

Answer	Number	Percentage
by phone	669	87.68%
by email	50	6.55%
walk-in	44	5.77%

If you contacted the Help Desk by phone, how long did it take to speak with a Help Desk consultant?

Answer	Number	Percentage
less than one minute	283	42.30%
1-5 minutes	240	35.87%
more than 5 minutes	115	17.18%
left a message on voicemail	24	3.59%
got tired of waiting / hung up	7	1.05%

If you contacted the Help Desk by email, how long did it take to get a response?

Answer	Number	Percentage
less than 8 hours	24	48%
more than 24 hours	14	28%
between 8 and 24 hours	12	24%

Was your question / issue addressed to your satisfaction?

Answer	Number	Percentage
Yes	661	86.63%
Still unresolved	67	8.78%
No	35	4.59%

Did you find the Help Desk staff to be (please check all that apply)?

Answer	Number	Percentage
Courteous, Helpful, Knowledgeable, Responsive	332	43.51%
Courteous	95	12.45%
Courteous, Helpful, Responsive	94	12.31%
Courteous, Helpful, Knowledgeable	42	5.50%
Courteous, Helpful	40	5.24%
Helpful	33	4.33%
Courteous, Responsive	23	3.01%
Courteous, Knowledgeable, Responsive	18	2.36%
Responsive	11	1.44%
Helpful, Knowledgeable, Responsive	9	1.18%
Ambivalent	9	1.18%

Courteous, Knowledgeable	9	1.18%
Helpful, Knowledgeable	8	1.05%
Courteous, Helpful, Knowledgeable, Responsive, Ambivalent	8	1.05%
Helpful, Responsive	7	0.92%
Uncooperative	3	0.39%
Rude, Uncooperative	3	0.39%
Courteous, Uncooperative	2	0.26%
Knowledgeable	2	0.26%
Knowledgeable, Responsive	2	0.26%
Courteous, Helpful, Responsive, Ambivalent	2	0.26%
Courteous, Helpful, Uncooperative	1	0.13%
Uncooperative, Ambivalent	1	0.13%
	1	0.13%
Rude, Helpful, Knowledgeable, Responsive	1	0.13%
Courteous, Ambivalent	1	0.13%
Courteous, Rude, Responsive, Ambivalent	1	0.13%
Helpful, Uncooperative, Ambivalent	1	0.13%
Courteous, Responsive, Ambivalent	1	0.13%
Uncooperative, Knowledgeable, Ambivalent	1	0.13%
Rude, Helpful, Responsive	1	0.13%
Courteous, Knowledgeable, Responsive, Ambivalent	1	0.13%

Some people are intimidated by seeking technical support. Were you uneasy about calling the Help Desk for assistance?

Answer	Number	Percentage
No	679	88.99%
Yes	84	11.00%

If you were intimidated prior to calling, how did you feel after calling?

Answer	Number	Percentage
less intimidated	76	90.47%
more intimidated	8	9.52%

The advice/guidance I received was?

Answer	Number	Percentage
At a technical level I could understand and implement	654	85.71%
Very technical, but explained in a way I could understand	55	7.21%
Inadequate: Did not address my needs	53	6.95%
Too technical, I couldn't follow the instructions	1	0.13%

If you received documentation or written instructions as a result of your call/email, was the documentation (please check all that apply)?

Answer	Number	Percentage
clear and easy to follow	174	79.45%
ok but could have been better	40	18.26%
clear and easy to follow, ok but could have been better	2	0.91%
ok but could have been better, too technical and confusing	1	0.46%
clear and easy to follow, ok but could have been better, too technical and confusing	1	0.46%
too technical and confusing	1	0.46%

If the problem took several interactions to resolve, were the time intervals between handoffs acceptable?

Answer	Number	Percentage
Yes	301	81.35%
No	69	18.64%

Would you call/write the Help Desk again?

Answer	Number	Percentage
Yes	743	97.37%
No	20	2.62%

Primary Email Support

The Help Desk provides email support for some of the central systems NBCS runs. Each of these email support addresses maintains statistics that are not included in the telephone or HDRT statistics.

helpdesk@nbcs.rutgers.edu

helpdesk@nbcs.rutgers.edu is the main contact address for general computer related questions for the Help Desk. The helpdesk@nbcs address is also used by NBCS to contact the University community about new services or changes in existing services. During Fiscal Year 2005-2006, helpdesk@nbcs received 3,729 messages and sent 3,898 messages.

help@nbcs Email Support Stats For Fiscal Year 2005-2006

	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06
In	300	226	117	67	69	40	98	86	88	59	81	74
Out	267	169	101	55	52	25	79	68	52	71	63	65
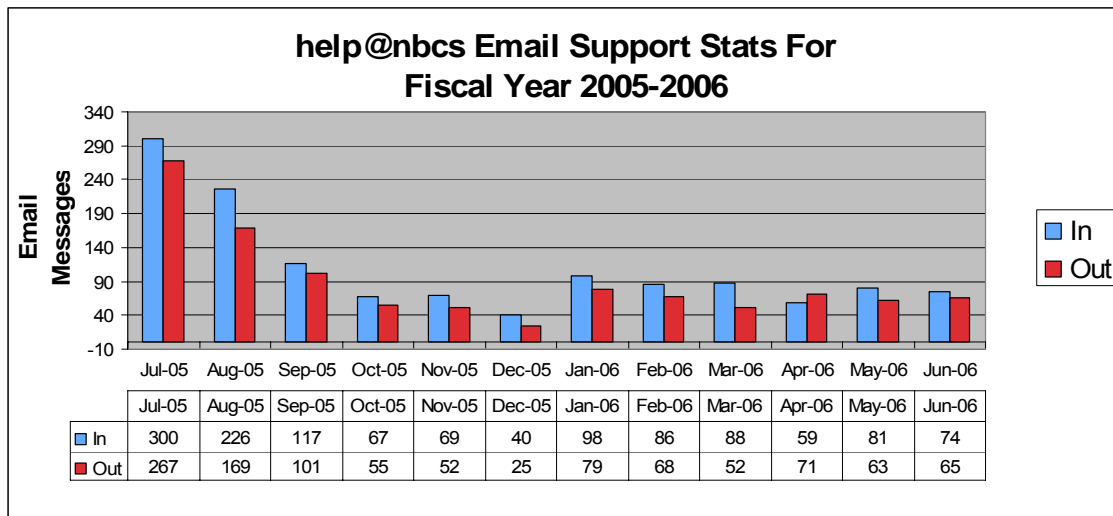
help@nbcs.rutgers.edu

help@nbcs.rutgers.edu is the main contact address for questions about the nbcs.rutgers.edu server system. This server is the main central system used by NBCS staff. During Fiscal Year 2005-2006, help@nbcs received 1,305 messages and sent 1067 messages.

helpdesk@nbcs Email Support Contacts For Fiscal Year 2005-2006

	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06
In	113	287	403	358	370	243	381	401	350	360	217	246
Out	130	350	382	352	367	248	395	427	370	392	227	258
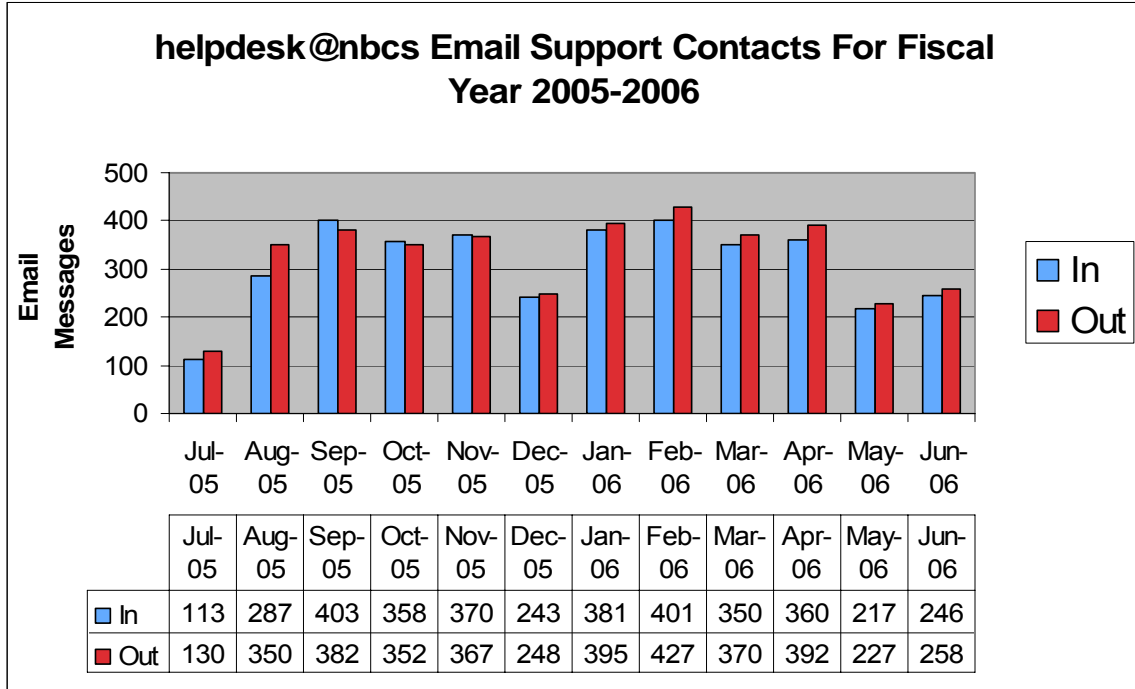
help@eden.rutgers.edu and abuse@eden.rutgers.edu

help@eden.rutgers.edu and abuse@eden.rutgers.edu are the main contact addresses for questions related to the Eden central server system. The majority of questions sent to this address are from students. During Fiscal Year 2005-2006, help@eden received 4,843 messages and sent 4,497 messages. abuse@eden.rutgers.edu received 75 messages and sent 50 messages.

help@eden Email Support Stats For Fiscal Year 2005-2006

	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06
In	486	631	491	253	365	321	349	244	586	363	416	338
Out	462	558	455	233	350	283	348	252	545	358	353	300
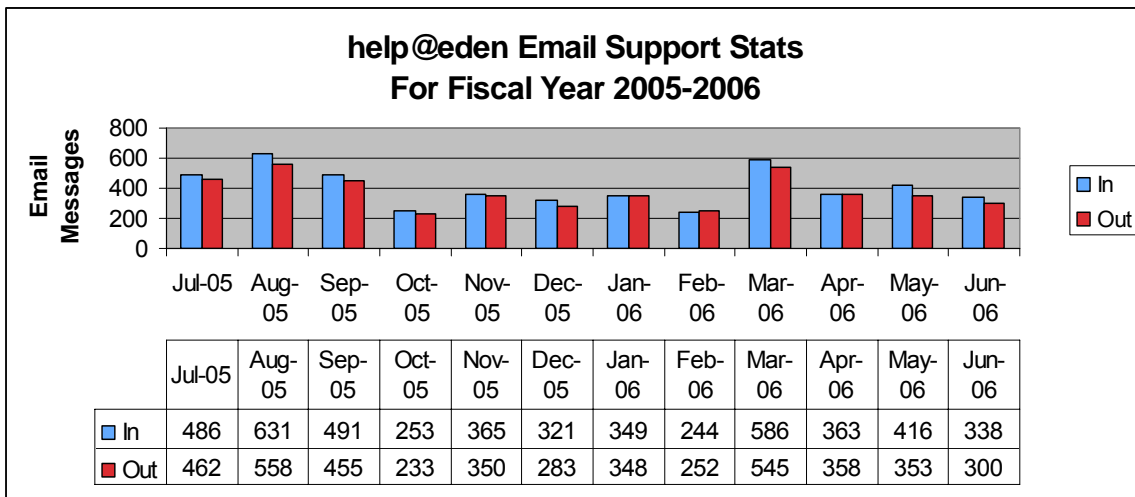
help@rci.rutgers.edu

help@rci.rutgers.edu is the main contact address for questions related to the RCI central server system for Rutgers University faculty and staff. During Fiscal Year 2005-2006, help@rci received 5,333 messages and sent 4,432 messages.
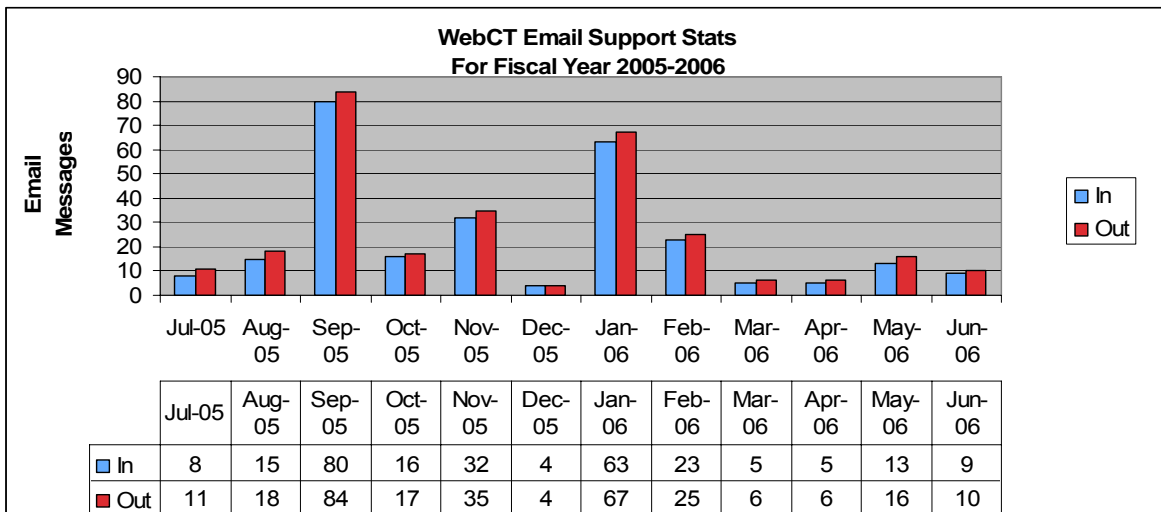
help@rci Email Support Stats For Fiscal Year 2005-2006

	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06
In	393	372	388	544	401	432	472	552	549	422	397	411
Out	309	307	369	416	324	358	397	441	482	354	331	344
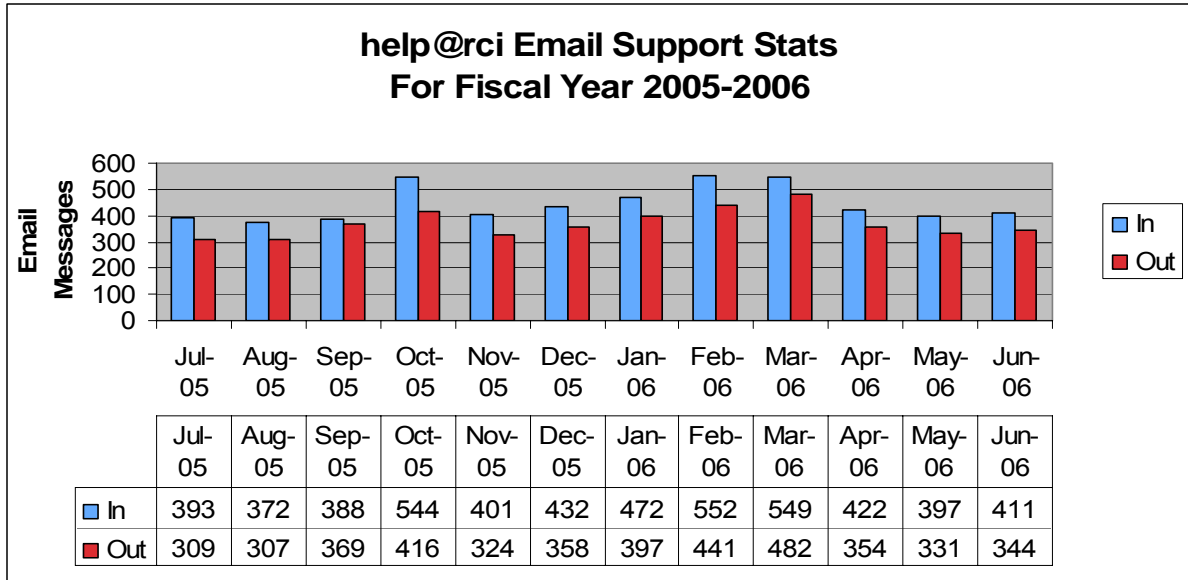
WebCT

webcthd@email.rutgers.edu provides basic WebCT support to faculty, staff, and students. 273 messages were received and 299 messages were sent during Fiscal Year 2005-2006. WebCT problems and questions are also logged using HDRT.

WebCT Email Support Stats For Fiscal Year 2005-2006

	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06
In	8	15	80	16	32	4	63	23	5	5	13	9
Out	11	18	84	17	35	4	67	25	6	6	16	10

Additional E-mail Support Statistics

SAS and SPSS

The NBCS Help Desk provides support to faculty, staff, and students with the statistic software packages SAS and SPSS by answering queries to the Help Desk or directly to the support person. There were 94 SAS and SPSS related support contacts in Fiscal Year 2005-2006.
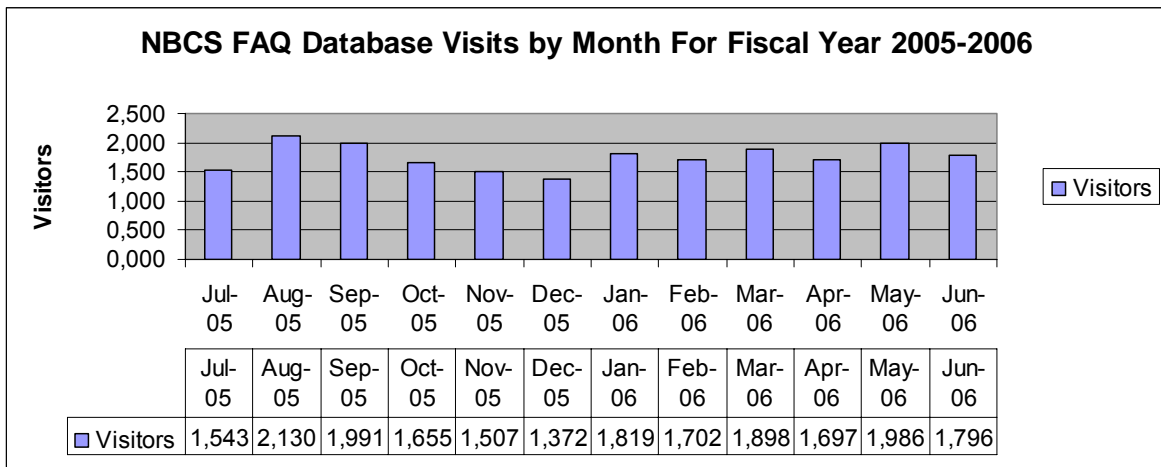
RULink Support

The RULink calendar system is an online calendar that is available to the University community. The Help Desk provides support for RULink by answering email inquiries to rulink_support@email.rutgers.edu. Support staff answered 445 contacts during Fiscal Year 2005-2006. RULink problems and questions are also logged using HDRT.

Edseries

The NB/P Education Series offers free hands-on computer training for students, faculty, and staff. This year, some classes taught in the NBCS Education Series were also taught as part of the ITCP program. During Fiscal Year 2005-2006, NBCS offered 108 classes through the Education Series and ITCP. 23 different classes are currently offered.

NBCS FAQ Database

The NBCS FAQ Database is used by the Rutgers University community on all campuses. The FAQ database is also accessed from outside the University. It is a valuable tool for viewing documentation on new services that are being offered as well as information about existing services. The FAQ Database had 21,096 visits in Fiscal Year 2005-2006.

NBCS FAQ Database Visits by Month For Fiscal Year 2005-2006

	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06
Visitors	1,543	2,130	1,991	1,655	1,507	1,372	1,819	1,702	1,898	1,697	1,986	1,796

LAN Support Services offers several public tools on its web site in addition to tools that are in place for customers via contracts. Since its inception, the lss.rutgers.edu website has been heavily used by both contractual customers as well as non-customer users. The following charts show web hit statistics on the lss.rutgers.edu website.

Fall 2005

Month	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Jan 2005	0	0	0	0	0
Feb 2005	0	0	0	0	0
Mar 2005	0	0	0	0	0
Apr 2005	0	0	0	0	0
May 2005	0	0	0	0	0
Jun 2005	0	0	0	0	0
Jul 2005	0	0	0	0	0
Aug 2005	0	0	0	0	0
Sep 2005	0	0	0	0	0
Oct 2005	111	160	1881	4067	122.77 MB
Nov 2005	152	225	1367	3773	84.92 MB
Dec 2005	157	177	694	1546	315.08 MB
Total	420	562	3942	9386	522.77 MB

Spring 2006

Month	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Jan 2006	308	368	1096	4120	41.42 MB
Feb 2006	337	537	1515	4741	394.58 MB
Mar 2006	431	792	2252	6902	434.70 MB
Apr 2006	538	909	5056	10780	1.14 GB
May 2006	430	768	6473	12779	466.94 MB
Jun 2006	478	737	8435	12962	270.08 MB
Jul 2006	146	219	1778	3578	1.42 GB
Aug 2006	0	0	0	0	0
Sep 2006	0	0	0	0	0
Oct 2006	0	0	0	0	0
Nov 2006	0	0	0	0	0
Dec 2006	0	0	0	0	0
Total	2668	4330	26605	55862	4.14 GB

The following graphs represent the percentage of uptime, in hours, of Residential Networking switches, by campus.

Busch Availability

College Avenue Availability

Cook/Douglass Availability

Livingston Availability
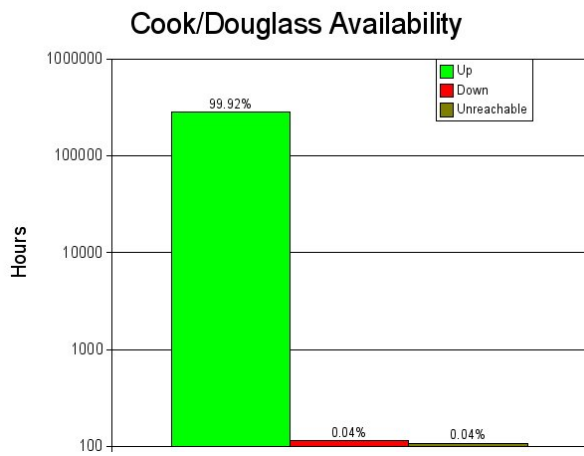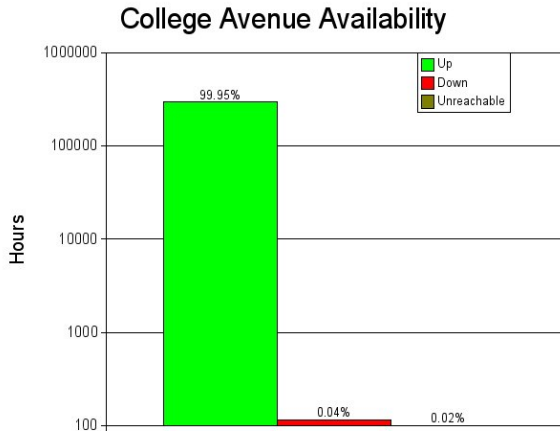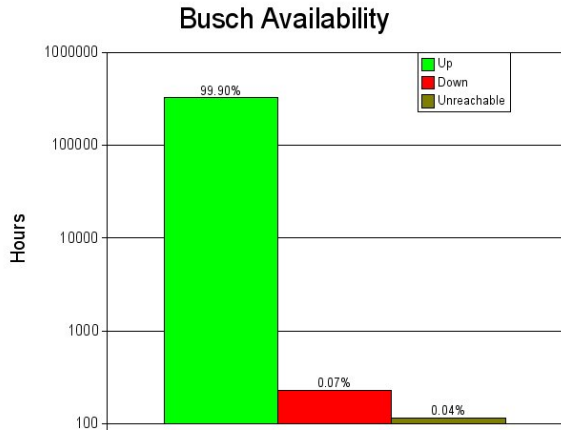
Antivirus Solution Evaluation

Overview

For the past several years, Rutgers University contracted with McAfee, Inc. to provide the campus with an antivirus solution for desktops, servers, and e-mail. Based on feedback from users, MSSG became increasingly aware of the fact that the product's effectiveness had begun to diminish rapidly. MSSG began to evaluate antivirus solutions from other major vendors in the enterprise market. In doing so, the group found what it believes to be the best solution that can truly fit the needs of Rutgers University. The solution is from Trend Micro, Inc.

Evaluation Requirements

Over a period of several months, MSSG researched and evaluated enterprise-class solutions from the major antivirus vendors: McAfee, Trend Micro, and Symantec as well as the smaller, well-known vendors F-Secure and Sophos. In researching and evaluating solutions, MSSG looked to see if the software met any or all of the following key requirements:

- Ability to produce new virus signatures quickly
- Dispersed/distributed manageability
- Unified client features
- Client transparency
- Support for all Windows OSes and Linux
- Web-based management console
- Company strength and overall AV strategy
- Ability to integrate with other solutions such as Cisco NAC
- Proactive notification on potential outbreaks and/or problems
- Ability to clean up after viruses and/or spyware have infected a system
- Ability to quickly prevent outbreaks while new virus signatures are not yet available

Ability to Produce New Virus Signatures Quickly

The period between when a virus is discovered "in the wild" and when a signature or pattern file is available for clients is extremely critical in the University environment. The longer it takes to get and distribute new pattern files, the more likely it is that clients will be infected.

Dispersed/Distributed Manageability

The ability to provide Unit Computing Specialists and/or departmental administrators access to manage their own clients was also an important feature. With the diversity in departmental IT policies, it is necessary to be able to give people the ability to set policies for their department differently than may be defined at the global level. Furthermore, departments need the ability to provide customized reports on systems under their control to their management.

Unified Client Features

The ability for client software to provide antivirus, anti-spyware, SPAM filtering, and firewall support in a single package was very high on the list of requirements. Packaging all of these features together under a single client not only reduces desktop and system tray clutter but typically takes up fewer system resources in terms of CPU and memory.

Client Transparency

Another aspect that MSSG looked at was how the client itself performed while a system was under heavy usage. Real-time scanning and monitoring needed to be as unobtrusive as possible. This also meant that any error messages or warnings that popped up as viruses were found needed to be easy to understand and answer. It was very important that the client be as transparent and easy to use as possible to users.

Support for All Windows OSes and Linux

There is a great deal of variety among systems within the University. Therefore, it was important that any solution support the full range of Windows operating systems from Windows XP and 2003 all the way back

to Windows 98 and Windows 95. In addition, adding support for protecting the growing number of Linux desktops and servers was also desired.

Web-Based Management Console
Enterprise management tools needed to be web-based for ubiquitous access. Not all system administrators run Windows on their desktop, so use of a Windows client-based management system is not desired in MSSG's environment. Furthermore, the console needed to be able to provide granular control over systems being managed.

Company Strength / Overall AV Strategy
Another factor in selecting an antivirus solution was how strong the company itself was. Fiscally weak or unsound companies tend to get bought out by larger corporations who may then change the levels of service a product provides even during a contract. Companies also needed to have a strong strategy and focus on antivirus and system security as part of this evaluation.

Ability to Integrate with Other Solutions Such As Cisco NAC
Network security is another area of focus when selecting an antivirus solution. The ability of a solution to integrate with third party solutions such as Cisco's Network Admission Control is an important feature. Because the vast majority of the network at Rutgers is controlled by Cisco equipment, it is vital that any possible solution be able to integrate with the existing network infrastructure.

Proactive Notification of Potential Outbreaks and/or Problems
Limited human resources prevent MSSG from watching any system 24x7x365. Therefore, it is critical that any solution be able to watch systems and automatically notify system administrators of possible outbreaks or issues on the network. The ability to email or page an administrator or administrators when there appears to be an anomaly on the network was determined to be vital in the list of requirements.

Ability to Clean Up after Viruses and/or Spyware
Another factor that must be considered when evaluating antivirus solutions is how well the product is able to clean a system after an infection. If a solution simply detects a virus but does not clean it up well, it does not save an administrator any time or effort. The solution should be able to successfully clean a majority of infections without having to rebuild the system.

Ability to Prevent Outbreaks Until New Virus Signatures Are Available
Many vendors have begun to discuss "zero-day" protection, but few actually do much about it. The ability to prevent an outbreak from occurring when there is no virus signature or pattern file available is extremely important. Hundreds of systems could potentially become infected in the time it takes a virus to be detected "in the wild" to the time a new pattern is available. A feature that was considered key was the ability for software to keep systems protected even though they were unable to detect the virus.

Evaluation Results
MSSG was able to fully evaluate McAfee and Trend Micro on each of these criteria. McAfee had been in place for the past few years, so MSSG's experience with that proved to be very useful in evaluating other solutions.

Symantec was only evaluated on a few of these criteria because of MSSG's past experience with the company and its software. Symantec's antivirus solution is extremely invasive in the fact that it installs registry keys and files all over a system's drive. On many occasions, the software fails to uninstall itself properly leaving a mass of problems behind. Its separate LiveUpdate process complicates matters concerning software and virus pattern updates and requires its own install/uninstall process. Symantec's track record for success has declined significantly over the last several years due to some major acquisitions. MSSG felt that the company has diversified itself so greatly in what it does that it no longer provides the focus on its antivirus solutions that it once did. As a result, their products have suffered greatly over the past several years. Furthermore, Symantec no longer supports downlevel Windows 95/98/ME clients, which still make up a significant amount of systems both at the University and at home.

Sophos and F-Secure were not evaluated on many of these criteria because they were ruled out early in the evaluation process for several reasons. First and foremost is the size of the company. Although both companies are important competitors to McAfee, Symantec, and Trend, MSSG felt that neither company was in a position to offer the trust and support needed when committing to a multi-year contract. There is a large concern that the company may be purchased by a larger corporation, such as a Symantec or Microsoft, at some point while Rutgers is under contract. This typically causes products to suffer during the acquisition phase and often even afterward. Furthermore, smaller companies have fewer resources. MSSG was concerned that fewer people were dedicated to providing technical support as well as staff dedicated to continued product development. Both companies might be viable contenders in a smaller business world and even on a smaller scale at the university level. However, MSSG didn't feel that either vendor could provide the confidence and support levels needed at Rutgers.

Ability to Produce New Virus Signatures Quickly
MSSG's experience was that, McAfee had been lacking on their ability to quickly protect against some of the most prevalent viruses. There were several times during the course of MSSG's contract where viruses were infecting systems because their pattern files did not protect against high-threat viruses. Furthermore, there were a few instances of McAfee producing DAT files that caused false positives to be reported. Trend Micro typically produces a pattern file within a matter of 30 to 60 minutes once a virus has been detected in the wild. Symantec, Sophos, and F-Secure vary on their turnaround time, but were all generally more than an hour.

Dispersed/Distributed Manageability
McAfee's ePolicy Orchestrator server is a fairly resource intensive application. Each server requires its own database that can grow to many gigabytes in size, and there is no easy way to consolidate reports from multiple servers in order to provide an overall picture of antivirus at the University. Furthermore, McAfee's solution was not very simple for administrators at remote locations to set up and configure. There was a steep learning curve when it came to managing an ePO server. Trend Micro's solution is simple. Sites can set up their own servers simply by using a web server. The setup and configuration is very straightforward, and each site can report to a master server at the global level making it easy to run enterprise-wide reports. Symantec, Sophos, and F-Secure were not evaluated on this feature.

Unified Client Features
Trend Micro's product has integrated antivirus, anti-spyware, anti-spam, and firewall support. A single agent installed on the deskop manages antivirus, anti-spyware, and a client firewall. This is significant because not only does it reduce clutter in the system tray, but it takes up far fewer system resources while it is running. By having everything integrated in one package, there are fewer processes to debug and cause issues on a system, which provides a much more cost-effective solution. McAfee, on the other hand, required you to run a separate antivirus, desktop firewall, and management agent all at once. Some clients are more memory and CPU intensive than others, but the McAfee solution takes significantly more resources to run than Trend Micro. Symantec has a fairly integrated solution as well, however, its client uses more resources than the Trend solution. Sophos, and F-Secure were not evaluated.

Client Transparency
Client transparency goes hand-in-hand with unified client features. As previously stated, Trend's solution is much more compact and robust than what McAfee was providing. Trend requires less memory while running and virtually no CPU cycles. McAfee, on the other hand, could cause a system to grind to a halt when it performed a full system scan or even while scanning a large attachment in e-mail. This had a sizeable impact on users who worked with large files on an almost daily basis. Many of them had to turn off real-time antivirus scanning, which defeated the purpose of having an antivirus solution installed in the first place. Trend has proven its ability to scan large files on even MSSG's oldest systems with virtually no interruption to users. Moreover, Trend has a much simpler interface than McAfee. Their interface is very straightforward and easy enough for most users to figure it out without any help from documentation. McAfee had a list of complex tasks and schedules for users to try and figure out, which often caused them to configure their systems incorrectly, leaving them vulnerable to attack. Symantec has an equally if not more complex interface to its software as well. F-Secure and Sophos were not evaluated on this requirement.

Support for All Windows OSes and Linux

McAfee and Symantec instantly failed this requirement because they have already dropped support for Windows 95, 98, and ME-based systems. Many clients were left with no supported protection after last June when McAfee discontinued their Win9x line of products. Although not as critical as Windows 98/ME support, F-Secure no longer supports Windows 95 systems either. Only Trend Micro and Sophos currently met the needs in terms of support for the various operating systems that MSSG feels are important to protect at Rutgers. Many Rutgers students continue to run Windows 98 and ME on their home computers, so it was important for MSSG to be able to provide them with some method of protection from viruses that can be managed for them. Trend's solution also provides support for Linux and Netware systems.

Web-Based Management Console

McAfee's management console was a 32-bit Windows client application. This severely limited administrators in what choices they had for supporting their clients. While most system administrators run Windows-based operating systems, some use Linux or Mac OS. Furthermore, access to the management console was not nearly as ubiquitous as it could have been with a web console. All of Trend's management and reporting interfaces are available through a standard web browser. Any administrator can access and manage any client under their control from anywhere as long as they have access to the Internet. This eliminates the need for administrators having to download and install a client on each PC they work on. What is even more important is that the web-based Trend console is far easier to understand and navigate as well as faster than the McAfee management console, which often broke and needed to be reinstalled. Symantec, Sophos, and F-Secure were not evaluated on this requirement.

Company Strength / Overall AV Strategy

While Symantec is a strong company overall, their focus has diversified so much over the years that MSSG felt they were no longer able to provide an effective antivirus solution. Several of their key acquisitions in the past few years have not been antivirus-related, so MSSG did not feel they were truly focused on providing world class enterprise support. McAfee has been shifting most of their focus from software to hardware appliances over the past year or so. This has caused their software to lag greatly behind their competitors' solutions. MSSG has seen the effectiveness of their product degrade tremendously over the past 3 years, mainly because they have lost their focus of providing a good antivirus software solution. While both Sophos and F-Secure are well-known, they are considerably much weaker vendors in the antivirus arena. One very important factor to MSSG was that the chosen company would be unlikely to be purchased by larger vendors. Because Sophos and F-Secure are comparatively small, there exists a possibility that either or both may be purchased by a larger corporation. As has been MSSG's experience, this is typically disastrous as the products tend to suffer overall. Another issue with smaller companies is support. They typically have much smaller support teams and fewer resources dedicated to technical support. Some even outsource their support infrastructure. This can cause major problems when trying to solve an issue in a timely fashion. Rutgers not only needed a good software solution but also strong technical and sales support.

Trend Micro is not only a fiscally sound company, grossing over $600 million in revenue last year alone, but is also dedicated to its focus on a total system security solution. Rather than buying smaller companies, Trend has chosen to partner with them so they can focus on providing the best solutions available and let their partners continue doing what they do best. Trend has an excellent support infrastructure, most of which is located right here in New Jersey. This gives MSSG excellent access to both their sales and technical support teams whenever they are needed.

Ability to Integrate with Other Solutions Such As Cisco NAC

All of the solutions evaluated were able to integrate with Cisco's NAC.

Proactive Notification of Potential Outbreaks and/or Problems

The only solution MSSG looked at that provided the ability to automatically monitor system activity and notify administrators of potential problems was Trend Micro. During testing, Trend's OfficeScan server was able to detect a high number of viruses on a particular machine and immediately sent notification of a

potential problem. This is an extremely helpful tool. It allows administrators to find a potential problem and stop it before the infection spreads throughout the University. McAfee's ePO server has no feature comparable to this. One would have to manually run reports to find similar information. None of the other vendors had features that were comparable to Trend's robust reporting in this situation.

Ability to Clean Up after Viruses and/or Spyware
McAfee did a mediocre job in cleaning up many of the viruses it encounters. Oftentimes, the software could not even clean a virus from the system completely. There have been many occasions, however, where a system was infected with multiple viruses, and McAfee was unable to detect all of the viruses correctly. McAfee also has had a very poor track record when it comes to cleaning up spyware. Most users have had to resort to 3rd party products such as Ad Aware or Spybot Search and Destroy to remove spyware from their system. Trend Micro has been very successful at not only detecting viruses and spyware but also cleaning up the infection. Many of MSSG's tests and other independent tests show that Trend has become the foremost effective product in detecting and cleaning spyware. This is a significant characteristic of Trend's product as spyware and adware has become as much if not more of a problem than viruses at the University. Symantec, Sophos, and F-Secure have average track records for detecting and cleaning viruses and spyware but they were not individually compared.

Ability to Prevent Outbreaks Until New Virus Signatures Are Available
The only vendor MSSG found that has a robust method to prevent viruses from spreading while there are no pattern files available is Trend Micro. Their Outbreak Prevention Services allow MSSG to quickly deploy policies to servers and workstations that help to stop viruses before they begin. One policy allows email servers to automatically quarantine specific attachments. Another policy may prevent new shares from being created on a workstation. Trend analyzes each threat individually and provides their clients with an outbreak prevention pattern within 10 minutes of a known exploit. Coupled with the fact that these patterns can be deployed automatically to clients, this greatly reduces exposure to infection from rapidly spreading viruses. McAfee, Symantec, Sophos, and F-Secure cannot provide such robust capability in their products that MSSG found.
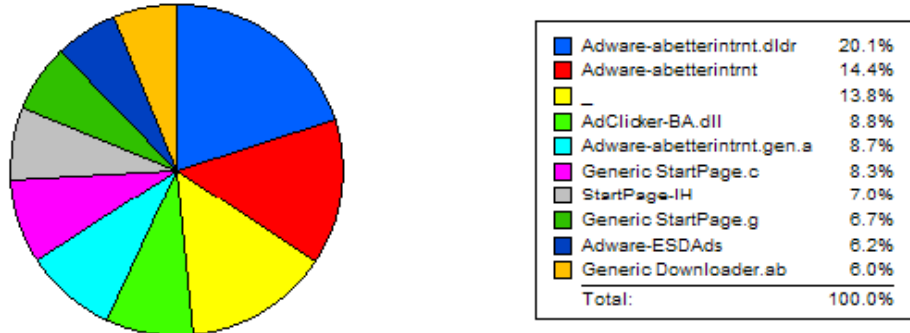
Conclusions
Over the past 3 years, MSSG had a chance to fully evaluate McAfee's antivirus solution. While the solution had been working, it was marginal at best. In the past year, performance degraded and the software began to lag behind many of its competitors. In evaluating solutions from other vendors, Trend Micro stood out in all testing.

Symantec, Sophos, and F-Secure were evaluated briefly, but it was quickly determined that their solutions could not meet the demanding needs of Rutgers. Symantec has a poor performance record and has shown their lack of focus on antivirus by purchasing several non-AV companies such as Veritas. Furthermore, their solution is extremely invasive in systems and often does not uninstall itself properly. Sophos and F-Secure stand the possibility of being purchased by larger companies and have more limited resources than many of the larger vendors do. There are fewer staff dedicated to research and development as well as technical and sales support.

Trend Micro has consistently been an industry leader in the realm of antivirus and system security. Some of Trend's largest clients are other universities such as Penn State and companies such as AOL, GM, Nissan, John Deere, and AT&T. They have an impeccable record in providing software that is robust and reliable. Their software will provide Rutgers with a complete system security solution. Their cross-platform solution includes antivirus, anti-spyware, anti-spam, and firewall packages. They have a highly configurable and distributed management infrastructure for handling even the most complex environments. The software's automation capabilities not only reduce the amount of human resources needing to be dedicated for support but provide added protection from viruses and threats.

From findings and feedback from users, it is MSSG's conclusion that Trend Micro was the only antivirus solution that could meet the ever changing and demanding needs of the Rutgers University environment.

McAfee RADS data for Fiscal Year 2005-2006
SUMMARY: Total events: 16,715,612
Infections by Virus Name

■	Adware-abetterintrnt.dldr	20.1%
■	Adware-abetterintrnt	14.4%
■	_	13.8%
■	AdClicker-BA.dll	8.8%
■	Adware-abetterintrnt.gen.a	8.7%
■	Generic StartPage.c	8.3%
■	StartPage-IH	7.0%
■	Generic StartPage.g	6.7%
■	Adware-ESDAds	6.2%
■	Generic Downloader.ab	6.0%
	Total:	100.0%

Top 10 Detected Viruses
Group Summaries

Virus Name	Count
Adware-abetterintrnt.dldr	3356406
Adware-abetterintrnt	2400401
_	2305958
AdClicker-BA.dll	1475129
Adware-abetterintrnt.gen.a	1456768
Generic StartPage.c	1384446
StartPage-IH	1164835
Generic StartPage.g	1127694
Adware-ESDAds	1034752
Generic Downloader.ab	1009223

OIT ITCP Foundational Courses

Course Name	Instructor(s)	Enrollment	Number of Sessions
Administrative Resources	Chianelli, Budnovitch, Chirco	20-30	6
Departmental Security Framework	Rights, Lorenc	20-30	6
Technical Resources	Varjabedian, Grzelak	20-30	6

OIT ITCP Elective Courses

Course Name	Instructor(s)	Enrollment	Number of Sessions
Using RU Link Calendaring	Abbott	10	2
Advanced RU Link[ES]	Bowell	10	1
e-Managing an Email Account[ES]	Donato	10-15	2
How to be a Mac Poweruser[ES]	Oleksiak, Boccardi	10	2
Unix I [ES]	Koft, Donato	10-15	5
Unix II [ES]	Koft, Donato	10-15	5
Unix III [ES]	Koft, Donato	10-15	5
Introduction to Data-Driven Web Design I	Fulton	20	1
Introduction to Data-Driven Web Design I	Fulton	20	1
Introduction to PHP I [ES]	Fulton	20-25	2
Introduction to PHP II [ES]	Fulton	20-25	2
Log Analysis	Binde	20	2
SANS-GSEC	Binde	20	1
Intrusion Analysis for Windows-Based Computers	Foster	25-30	1

[ES] - offered as part of the NBCS Education Series

Future OIT ITCP Classes

Course Name	Instructor(s)
Disaster Recovery for Windows-Based Servers	Mills
Budget Planning and Procedures Manuals	Mills
Blackhat Security	Lorenc

Orientation Events Attended by NBCS Employees

Event	Date(s)	Groups
Cook College Student Orientation	1/6/2005	Computer Store/Repair
Douglass College Parents' Program	5/7/2005	Computer Store/Repair
Livingston Summer Orientation, Account Creation	6/21, 6/25, 6/29/2005	CCF, Computer Store/Repair
Admissions Scarlet Day	7/8/2005	Computer Store/Repair
Douglass College Transfer Student Orientation	7/14/2005	Computer Store/Repair
University College Student Orientation	8/20/2005	CCF
Move-in Weekend (SWAT)	8/27, 8/29/2005	ResNet, CCF, Help Desk, Computer Store/Repair
Rutgers College Parent's Q&A	8/27/2005	CSS, CCF
Douglass College Day	10/22/2005	Computer Store/Repair
Admission Open House	11/10, 11/11/2005	CCF, Computer Store/Repair
University College Student Orientation	8/20/2005	CCF
Cook College Parents Fair	3/4/2006	Help Desk
Douglass Newly Admitted Students Fair	3/4/2006	Computer Store/Repair
University Open House	4/8/2006	CCF, Help Desk
Parent Orientation (Rutgers, Cook, Douglass colleges)	5/6, 5/13/2006	CCF, Computer Store/Repair, Help Desk
Rutgers College Parent's Q&A	5/6/2006	CCF
Cook College Parents' Day	5/6/2006	Help Desk
Rutgers College Discovery Day	6/7, 6/12, 6/20/2006	Computer Store/Repair
Livingston College Orientation and Account Creation	6/21, 6/25, 6/29/2006	CCF

Special Events Hosted by CCF Labs, Spring 2005

College Avenue Campus	**Tsunami Relief Effort** For the second half of the Spring 2005 semester, the College Avenue Computing Center collected funds for the relief effort to the areas affected by the Southeast Asia tsunami and earthquake. Patrons and student staff generously donated for this cause, and $225.00 were collected for this cause. The CCF-CAC staff hopes this effort was a way for the staff to help give back to those less fortunate, and looks forward to taking part in other charitable causes in the future.	**Visit from University of Tokyo** CCS Director Frank Reda, ESS (Enterprise Systems and Services) University Director Michael Mundrane, CCF Associate Director Wayne Higgins, CCF CAC Manager Leroy Wilkins, CCF CAC Assistant Manager Mostafa Khalifa, CCF CAC student supervisors and consultants provided a tour of the College Avenue Computing Center in Records Hall to approximately 15 representatives from the University of Tokyo. Wayne Higgins led the tour of the main lab on the College Avenue campus. Wayne discussed many topics affecting the computer labs: available software and hardware; the Rutgers network infrastructure; staffing, scheduling, hiring and training of student staff; budgets, inventory and supplies; printing and print management; security; annual upgrades and the upgrade schedule; IMLS (Instructional Microcomputing Labs) and scheduling classes; office space planning and renovations; and the challenges of operating 14 facilities.
Busch Campus	**Software Acquisition and Design for Hale Center** CCF was contracted by the Department of Athletics to assist in software acquisition and design for Hale Center. The Busch Campus Computing Center held account creation session for student athletes in January to assist student with creating their NetIDs and establishing secure passwords for their accounts.	**RISE Program** The Busch Campus Computing Center worked with RISE program coordinators to create temporary guest accounts for their program. Computer lab staff held Introduction to Rutgers Computing classes for RISE participants.
Cook/Douglass Campus	**RIOS Summer Followship Program** The CCF Cook/Douglass Computing Center hosted a data workshop on May 27, June 2, and June 9, 2005 for incoming interns to the Research Internship in Ocean Sciences (RIOS) Summer Fellowship Program. This program was offered through the Department of Marine and Coastal Sciences.	
Livingston Campus	**Account Creation Sessions** The Livingston Campus Computing Center, in collaboration with the NBCS Help Desk, hosted account creation sessions for incoming Livingston College freshmen in June, 2005. The Computing Center also hosted an account creation session for incoming transfer students in June 2005.	**Upward Bound** CCF's Livingston Campus Computing Center provides computer classroom facilities for Upward Bound, a federally funded program for high school students, throughout the year. Basic computing skills, writing, and research methods are taught to groups of about 100 students. CCF assists the program coordinators with account creations and printing privileges for the group.

Special Events Hosted by CCF Labs, Fiscal Year 2005-2006

Busch Campus	**College of Nursing HESI Exams** The College of Nursing used the Busch Campus Computing Center to administer their online comprehensive exams in December, 2005, January, 2006, and May, 2006. CCF worked closely with the HESI author to help test the exam and resolve computer compatibility issues.	**NCBI Course** The Busch Campus Computing Center provided computer classroom space and had temporary guest accounts created for a DIMAS 2 day course. Specialty software was tested and installed by CCF Netops.	**RISE Program** The Busch Campus Computing Center worked with RISE program coordinators to create temporary guest accounts for their program. Computer lab staff held Introduction to Rutgers Computing classes for RISE participants.			
College Avenue Campus	**Rutgers College Educational Opportunity Fund (EOF) Computer Workshop** In support of the EOF (Educational Opportunity Fund) program, CCF made available the Rutgers Student Center Computing Lab for EOF student use for the duration of the program, Mondays through Thursdays, June 26, 2005 through July 28, 2005. This facility is normally closed for the summer. This summer program supports incoming first year students who receive EOF funding. Use of the computing lab helped to prepare the students for their first year at college.	**International Student Orientations** These sessions provided an overview of computing at Rutgers, including the CCF labs, Residential Networking, and the web services available to students. Students were also instructed in the creation and use of their NetIDs.	**South Asia Earthquake Relief (October-December)** CCF continued efforts to give back to those less fortunate by encouraging lab staff and patrons to donate to South Asia Earthquake Relief efforts. The lab collected over $600 over the course of the fall 2005 semester. This money allowed CCF to sponsor an orphan for an entire year (food, shelter, medical, clothing and educational expenses). CCF is happy to see staff and patrons give so generously to those in need.	**University Relations Photo Shoot at College Avenue Computing Center (10/27)** University Relations contacted Associate Director Wayne Higgins for an opportunity to expand their general photo file of campus and classroom imagery. Photographers came to the College Avenue Computing Center in Records Hall, an active and well-equipped computer lab, where they photographed wide-angle shots of the main gallery to show students working. They also photographed the IMLs, where the available projection equipment showcased educational services, such as WebCT, available to students.	**Targum Tour of the College Avenue Computing Center** As part of a story of available services and recent upgrades at CCF, the Targum scheduled a tour and interview with Associate Director Wayne Higgins, accompanied by Netops manager, Brian Luper, and College Avenue Computing Center manager, Leroy Wilkins. Among the topics discussed were the 24-hour labs, print release stations, and the training CCF staff completes each year.	**University College Student Orientation** On January 14, 2006, the College Avenue Computing Center hosted a two-hour orientation session for University College students. Students were taught how to access email accounts and other University computing resources. CCF staff assisted students with changing their passwords and creating new NetIDs. CCF staff informed students about where and how to obtain RUConnection cards.
Cook/Douglass Campus	**Douglass Educational Opportunity Fund** The Loree Computing Center was made available during off hours to EOF students several evenings during a five week period in June and July, 2005. These additional hours were provided for EOF students to have computer access to complete their summer coursework.	**Douglass Science Institute** During July, 2005, the Loree Computing Center helped provide hands-on experience for young women entering 9th grade to explore a variety of science-related areas. This program was sponsored by Douglass College and the Associate Alumnae of Douglass College.				
Livingston Campus	**Upward Bound** CCF's Livingston Campus Computing Center provides computer classroom facilities for Upward Bound, a federally funded program for high school students, throughout the year. Basic computing skills, writing, and research methods are taught to groups of about 100 students. CCF assists the program coordinators with account creations and printing privileges for the group.	**Livingston Summer Orientation/Account Creation** The Livingston Computing Center hosted six orientation sessions of approximately 100 students each during the summer of 2005. The computer lab coordinated with the Help Desk and ResNet to assist Livingston College incoming freshmen with their NetID creations, provided an overview of computing services at Rutgers, and answered questions about computing services.				