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A Message from the Vice President for Information Technologies

Preparing this letter is one item on my “to-do” list that I really do enjoy! It gives me a chance to step aside from the ever-present press of routine activities and put the year past and the year ahead into a coherent perspective in my mind. When I do, I’m always impressed with the progress that has been made. We accomplished most of what we set out in our plan, plus all of those things that came up as we went.

Major accomplishments

Last year, I said I thought there would be six areas of focus for this year. As it turned out, there were the major points, but with slight tweaking.

1. EJavaNet would begin. It did—Upson Hall will be done by fall 2004. We also made progress on a Cornell-owned fiber network between Ithaca and New York City, joined National LambdaRail, and saw an explosion of interest in the RedRover wireless service.

2. Our PeopleSoft focus would shift to student administration and the Student Records deployment. We implemented PeopleSoft Contributor Relations with Alumni Affairs and Development, and Benefits Administration with the Office of Human Resources. Major effort has been invested in initiating the Student Records project.

3. Workforce Planning recommendations would be adopted and some changes put in place. The recommendations were adopted, and several CIT-focused ones have been acted on. Other units will indicate their plans by Nov. 2004.

4. We would begin implementing the IT Security Plan. We began, but spent much of the year fighting fires caused by worms, viruses, and compromised computers. We weren’t alone in this misadventure: the villains doing it painted with a very broad brush everywhere.

5. NUBB (Network Usage- Based Billing) would be in place. It was, in July 2003. We have continued to make improvements to the billing system.

6. We would continue to improve customer satisfaction and working conditions within CIT. We succeeded in improving the community’s perception of the value of our services relative to the price. Improvements in how we manage and staff data services let us reduce rates even while improving the infrastructure.

Related is our continuing emphasis on IT policies. Last year, the focus was primarily on security; this year, it will also be on privacy.

7. Workforce Planning: Cornell will begin moving to a more collaborative, better integrated IT environment—one that is truly distributed, rather than just decentralized. The IT Managers’ Council will be an important forum for communications and technical decisions, and clanned roles and responsibilities will help eliminate duplication and confusion. In addition, we’ll zero in on ways to improve our voice and data services. A new position in OIT, the director of distributed support, will facilitate our general efforts.

8. Distributed learning: We’ll join faculty leaders in evaluating the faculty Innovation in Teaching grants program and Lynx (Student Technology Assistants) program.

9. Cornell web presence: Our Web Production Group will continue providing technical support for the redesign of Cornell’s main web site, being led by vice president for communications and media relations Tom Bruce.

10. Email: Our Messaging group will totally the e-mail system by isolating internal and external traffic; filtering spam more aggressively; offering optional, user-selected e-mail addresses; implementing a new mailing list system; and providing for automated replies (so-called vacation mail).

Dedication

I started out dedicating this report to our Network and Communication Services staff. They’ve been through as much this year and risen to many challenges.

Then I thought about our Security staff and their colleagues in the Network Operations Center and at the Contact Center who worked so valiantly to help the community through wave after wave of worm attacks. And of course the Messaging group’s “beyond the call” work in responding to crippling e-mail queues and outages.

Then I recalled our PeopleSoft teams implementing complex systems. And our Distributed Learning Services staff supporting hundreds of faculty and over 20 Faculty Innovation projects, not to mention doing a major Blackboard upgrade.

That reminded me of our Administration and Finance team’s success in executing thousands of transactions accurately and delivering a budget closeout right on target. And Customer Service and Marketing’s project to identify and catalog all of our services— and and and...

I keep coming up with examples of how CIT staff make this a great place for students to learn. I dedicate this report to each and every one of them. Thank you most sincerely.

Our mission statement

Cornell Information Technologies (CIT) is committed to partnering with the Cornell community to provide excellent information technology products and services. Our IT leadership and support enables the university to uphold its high standards in teaching, research, and outreach.

Our Vision

Cornell University pursues a selective “early adopter” strategy for its information technology environment. CIT focuses on the quality infrastructure and services that faculty and students expect to find at a premier research university. The Cornell community expects and deserves reliable, efficient, and well-managed technologies, and CIT ensures these needs are met. The faculty pioneers the development and application of technology to conduct world-class research and instruction, and CIT facilitates their work.

What is OIT?

The Office of Information Technologies (OIT) provides strategic leadership for IT at Cornell University. It is the office of the vice president for information technologies, as well as the parent organization of Cornell Information Technologies (CIT). OIT’s work includes:

- Coordinating campuswide security efforts and education campaigns
- Exploring and recommending IT architectures and standards
- Providing university-wide guidance in technology policy development and legal and ethical issues of IT
- Building partnerships and collaborations with corporate partners and vendors
- Directing strategic human resource management for OIT and CIT and collaborating on issues affecting IT jobs across campus
- Overseeing OIT and CIT financial and budgetary planning

What is CIT?

Cornell Information Technologies (CIT) is the university’s central IT organization. It supports business infrastructure, informational software, and instructional and operational needs of video, data, and telecommunications customers at Cornell. CIT consists of six divisions under the leadership of the vice president for information technologies.

- Business Information Systems
- Customer Service and Marketing
- Distributed Learning Services
- Integration and Delivery
- Network and Communication Services
- Systems and Operations
Waging war on worms

Waging war on worms

www.cit.cornell.edu/security/alerts/  

The past year we saw an unprecedented level of disruption due to computer viruses and worms. Throughout the year, one worm or virus after another hit the campus, keeping our staff on the security and networking teams and at the Contact Center and Network Operations Center hopping, not to mention the university's cadre of local support providers. Routine defenses such as our campuswide license for Symantec Antivirus, our PureMessage filtering on e-mail, and our new Edge ACL program acted as a strong barrier in many cases. Some worms that swept the nation barely made a dent here. Still, we did get hit hard by a few.

In August 2003, just at the start of the school year, variants of Blaster/Welchia/Nachia infected hundreds of computers via a Windows vulnerability. Soon after came SoBig.E: a mass-mailing worm. We contained these infections by blocking certain ports and types of traffic for everyone and blocking Internet access for infected systems.

Our PureMessage e-mail filtering tool gives some indication of scale. Active for about two-thirds of our e-mail accounts at that time, PureMessage was typically flagging 1 percent of e-mail as containing viruses. In the last two weeks of August, PureMessage flagged approximately 50 percent.

April 2004 was another rough month, with Nergis and Beagle/Bagle variants not initially detected by PureMessage or Symantec Antivirus. We blocked certain attachment types in the interim. Later that month, around a thousand computers fell victim to worm variants that targeted recently announced Windows security holes and several previously known vulnerabilities. These new worms spread directly from computer to computer. We again isolated infected systems to contain the infection.

Both sets of incidents made it very clear that we must continue our efforts to educate and remind the campus community about their critical role in warding off worms and viruses. Virus writers are all too aware that many people don’t install operating system patches and antivirus updates as soon as they are available, or even within a few weeks. That’s what happened at Cornell. Though we in CIT employ numerous defenses to keep viruses from ever reaching the community, brand-new worms and variants can and do get through. We’re looking at how we can help the community get patches and updates installed, so they can more effectively act as the final line of defense and be spared the expense and inconvenience of disinfecting their computers.

Keeping Cornell’s networks safe

www.cit.cornell.edu/computer/security/  

Take 40,000 components on Cornell’s networks, with any and every type of operating system imaginable. Watch hackers scan each one dozens of times, every day. Wonder which scans will find weak or nonexistent passwords. Or unsupplied systems. Or open file-sharing. Or any of dozens of other vulnerabilities. That’s the reality of network security at Cornell.

At that description alone, it doesn’t sound terribly secure. But, thanks to our multi-layered strategy and the coordination and hard work of local support providers throughout the campus, hackers go wanting most of the time. Our approach includes policy and education, infrastructure, monitoring, business continuity and disaster recovery, and incident response and analysis. A snapshot of this year’s initiatives:

- Symantec managed client firewall: We extended our licensing agreement with Symantec to include their managed client firewall product for Windows systems. Local support providers can now use the full Symantec Client Security (SCS) package, which allows management of both firewall and antivirus deployments at the department level.

- Edge ACLs: In summer 2003, we launched an edge ACL (access control list) service to enable local support providers to block certain types of traffic from reaching their individual subnets. It took less than a month to create the back-end management tools and training, and the service gained significant popularity as soon as it was publicized. As of April 2004, over 50 departments plus the Residence Hall Network Service were using edge ACLs. Out of the 7,500 VLANs on campus, over 280 had edge ACLs.

- Edge ACLs give local support providers functionality similar to what they’d get running a local firewall, and at no cost. They benefit from fewer scans by hackers, which means fewer compromises and fewer locked-out accounts caused by password guessing. NUBB bills are lower in some cases. And administrators are able to exercise more control over what users can do on their computers.

- Security assessments: Demand for our security vulnerability assessment service continues to grow. We routinely scan the Residence Hall Network Service as well as other areas when requested. We also distribute license keys to departments to run their own scans. Network administrators typically use the service to provide a baseline against which to gauge security improvements, and to ensure that compromised systems and networks have been adequately secured. Our tool, Internet Security Systems’ Internet Scanner, checks for approximately 1,000 vulnerabilities.

- Departmental consulting: We are working one-on-one with network administrators to help them plan their security strategies. We also offer assistance with restoring compromised systems and networks.

In fiscal year 2005, we will be exploring ways to allow students to more easily manage the security of their computers, and we will be making further improvements to the security of the Residence Hall Network Service. For the broader campus, we are looking at tools that would help us be more proactive in responding to emerging threats. And we will be focusing on security in administrative computing.

Information Technologies Leadership
Policy education forums
www.cit.cornell.edu/oit/UCPL.html

• Apr. 2004: “Security of IT Resources, and Security Incident Reporting, Session 1,” with Steve Schneider, director of IT security, and Tracy Mitroff, director of IT policy and UCPL.
• Apr. 2004: “Recording and Registration of Domain Names,” with Tracy Mitroff, director of IT policy and UCPL, Stacy Pendell, technical writer at CIT, and Mariann Carpenter, manager of the Network Operations Center.
• May 2004: “Network Registry,” with Tracy Mitroff, director of IT policy and UCPL, Stacy Pendell, technical writer at CIT, Laurie Cornishworth, technical project lead at CIT, and Jenny Signor, hostmaster at the Network Operations Center.
• June 2004: “Security of IT Resources, and Security Incident Reporting, Session 2,” with Steve Schneider, director of IT security, and Tracy Mitroff, director of IT policy and UCPL.

University Computer Policy and Law Program
www.cit.cornell.edu/oit/UCPL.html

The University Computer Policy and Law Program (UCPL) promotes IT ethics education and encourages campus community discussion and debate on these topics by sponsoring speakers for both small workshops and university lectures.

• Mar. 2004: “Impact of the Patriot Act on Cornell: An All Day Review,” with Tracy Mitroff, director of IT policy and UCPL.
• Apr. 2004: “The Pieces and the Puzzle of IT Policy at Cornell,” with Tracy Mitroff, director of IT policy and UCPL.

UCPL’s All-Day Patriot Act Review

In addition to reviewing the IT function, we were asked to benchmark the costs of communications services. To begin, we hired Gartner Inc. to analyze Cornell’s costs for voice and data services relative to those at peer institutions and the private sector. Overall, higher education’s costs for most categories are lower than in the private sector. Among our peers, Cornell’s costs for most categories are low. A committee is reviewing the results and will be making recommendations.

3. Units should adopt and support the defined IT Roles and Responsibilities (www.cit.cornell.edu/oit/Reports/2003) unless a special Memo of Understanding between the vice president or dean and vice president for information technologies is agreed upon.

4. The vice president for information technologies should establish an IT Managers’ Council (IMC) with membership of the designated IT manager for each major unit.

5. The university should assign, support, and hold accountable CIT/the director of Business Information Systems for developing and promulgating a vision and architecture for administrative systems that includes not only the central functional systems but also the school/college and departmental-level systems.

Additional recommendations focus on efficiency and service enhancements (9 recommendations) and improvements that will be made by CIT and the central administration (14 recommendations). If all recommendations are fully adopted and implemented in the most effective manner possible, Gartner Inc. estimates the university could realize significant financial savings, potentially as much as $9.8 million per year.

Policy 5.4.2, Reporting Electronic Security Incidents: responsibilities for reporting network and computer security incidents, collecting information about them, and taking action to correct them

Policy 5.6, Recording and Registration of Domain Names: procedure for recording domain names purchased with university funds, and for registering names within the cornell.edu domain or non-cornell.edu names whose domain name is served by Cornell domain name servers

Policy 5.7, Network Registry: procedure for registering IT devices connected to Cornell’s networks

We have four more policies in the works:

• Policy 5.1, revision of Responsible Use of Electronic Communications: what constitutes inappropriate use of the university’s IT resources; revision will take into account other policies developed since 1995 and limit scope to users’ obligations

• Policy 5.5, Access to Electronic Mail: circumstances in which custodians of e-mail will intercept, access, forward, route, or disclose e-mail in which they are not correspondents, and procedures for requesting such action

• Policy 5.x, Privacy of the Network and Network Flow Logs: university’s position on monitoring, posting, or removing content material from its networks and computers, and procedures regarding the retention, protection, and access of network flow logs

• Policy 5.x, Authentication and Authorization

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Advancing an architecture for administrative computing

www.cit.cornell.edu/uit/papers.html

Cornell stands alone from our Ivy peers in how we approach administrative computing. Currently there is no unified vision, and each department has unilateral control of the technology it chooses to deploy. The result! At least 3 major database applications, 4 hardware platforms, 4 operating systems, 6 development shops, and varied backup processes.

The costs of operating this way—millions of dollars—came to light during Cornell’s Workforce Planning review of IT staffing. Not surprisingly, the review team wants to see a coherent, campuswide IT architecture created for Cornell. We will focus first on administrative computing, then expand to the campus. With our partners across the university, we have proposed an administrative computing architecture that will:

- Be governed by an administrative advisory group that oversees and coordinates all administrative systems.

- Encompass selected “Cornell-standard” database management applications and a standardized set of processing hardware and related storage systems. This will help achieve better value in purchasing and supporting administrative computing tools.

- Rely on common standards for business transaction rules, data definitions and views, and access privileges for both users and developers. This will foster optimal interoperability and coordination of efforts.

- Be accessed by users through an enterprise web portal and thin clients (likely web browsers). This will best serve Cornell’s diverse customer base, wherever they are on whatever technology they’re using.

We anticipate moving forward with detailed recommendations for “Cornell-standard” hardware and software components in fiscal year 2005.

Bringing better wiring to buildings

We have embarked on EzraNet, our 15-year campus rewiring journey. Over the course of this $57-million initiative, we will upgrade data wiring and the distribution infrastructure in over 50 buildings. In most cases, that means replacing 15-year-old category-3 wiring with category-6, twisted-pair copper wiring.

This year, we did design work and began rewiring Upson Hall. Plans call for building or renovating 4 telecommunications rooms and installing category-6 wiring in most locations, with fiber wiring in selected rooms and between the networking distribution frames. We also did design work for Clark Hall and the Biotechnology Building. We expect to finish Upson this fall and begin rewiring Clark and Biotech.

What Cornell’s IT Dollar Buys: Budget $49 Million (Fiscal Year 2004)

- Data Network Services (18%)
- Voice and Other Telecommunications (13%)
- IT Campus/Regional Pripriam (5%)
- Several Campus Services (25%)
- Management (24%)
- Distributed Learning and Development Support (11%)

In November 2003, Polley Ann McClure, vice president for information technologies, was named the 2003 recipient of the EDUCAUSE Award for Excellence in Leadership. It is the highest individual award given by EDUCAUSE, honoring extraordinary effectiveness, influence, statesmanship, and lifetime achievement, on both individual campuses and the wider higher education community. A nonprofit association of nearly 1,900 colleges, universities, and education organizations, EDUCAUSE advances higher education by promoting the intelligent use of IT.

In November 2000, then-president Hunter Rawlings initiated a comprehensive review of eight nonacademic functional areas on the Ithaca campus. A lead team is established for each functional area and given objectives recommended by the Workforce Planning Team and approved by the president, provost, and vice president for administration and chief financial officer. The lead team develops recommendations and submits them to the Workforce Planning Team for review. The lead team for IT comprises Polley Ann McClure, vice president for information technologies (chair); Bill Arms, professor of computer science; Charlie Fay, associate provost for research administration; Fred Schneider, professor of computer science; Paul Streeter, senior project director in the Division of Planning and Budget, and Joe Thomas, associate dean for academic affairs at the Johnson School.

The IT team documented the number of IT staff and their responsibilities and organizational structure, brought in an external team to review administrative computing, developed ways to integrate and coordinate IT efforts across campus; calculated how much money is spent on IT; and, in consultation with Gartner Inc., estimated what could be saved through better integration and coordination of IT activities.

Ivy peers in how we approach administrative computing.

www.educause.edu/awards/leadership/2003/mcclure.asp

We anticipate moving forward with detailed recommendations.
Beginning in July 2004, we will launch a technical support service with full-time employees dedicated to filling in gaps in local departmental technical support. We anticipate doing tasks such as configuring and troubleshooting computers and peripherals, installing and troubleshooting software; checking for and removing viruses and worms; recommending products and services; and maintaining local area networks.

Departments can use this service by securing a technical support staff member on either a part-time or per-engagement basis. Either way, CIT will handle the hiring, training, and management of the staff, freeing the department to focus only on the specific technical work they want done. The Cornell Institute for Public Affairs, the Graduate School, and the Africana Studies and Research Center have already signed on, and more departments have expressed interest.

Professional affiliations

- ACM (Association for Computing Machinery)
- ACDM (Association for Communications Technology Professionals in Higher Education)
- BICSI (Telecommunications)
- CNVCA (Central New York Communications Association)
- CSG (Common Solutions Group)
- EDUCAUSE
- EDUCAUSE/Corbett Institute for Computer Policy and Law
- EDUCAUSE NLI (National Learning Infrastructure Initiative)
- ICA (International Communications Industries Association)
- Internet2
- Ivy Plus
- JA-SIG (Java Architectures Special Interest Group)
- National Center for Disability and Research Network
- JA-SIG (Java Architectures Special Interest Group)
- PMI (Project Management Institute)
- Sakai Project
- SIGUCCS (Special Interest Group on University and College Computing Services)

Goal:
Support Cornell’s administrative computing needs: In concert with colleagues from Cornell’s administrative units and the university leadership, CIT is deeply engaged in the ongoing effort to modernize administrative systems.

Progress:
- PeopleSoft additions
- Mainframe improvements
- Time-clock system upgrade
- Graduate School’s Special Committee tool
- New admissions datamart
- Natural upgrade
- Pinnacle upgrade

Continuing to expand PeopleSoft
We added two major components to PeopleSoft this year—BenetSoft Administration (March 2004) and the Contributor Relations module (July 2003)—and we are hard at work on a third, Student Administration. These components join the Human Resources/Payroll module, which has been in place since 1999.

- PeopleSoft Benefits Administration automates the labor-intensive process of tracking which benefits faculty and staff have selected. It automatically determines employee eligibility and dates of coverage, and updates employee records with the benefits they have chosen. The system is expected to improve accuracy and consistency of employee benefit data.
- PeopleSoft Contributor Relations provides an integrated suite of applications for student accounts, financial aid, admissions, student records, academic advising, course management, and degree progress. A team from the Office of the University Registrar, the colleges, and CIT is currently engaged in the analysis and design phase for implementing the Student Records (Registrar) portion.
- PeopleSoft Student Administration provides an integrated suite of applications for student accounts, financial aid, admissions, student records, academic advising, course management, and degree progress. A team from the Office of the University Registrar, the colleges, and CIT is currently engaged in the analysis and design phase for implementing the Student Records (Registrar) portion.

In early June 2004, we implemented the “course entry” piece of Student Records, which replaces a system that tracked which courses are offered at Cornell. An integral step was improving data delivery, so we also implemented...
Enhancing the mainframe at minimal cost
PeopleSoft may be what people think of first when they think of Cornell’s administrative systems, but the mainframe is actually the workhorse behind many systems, including accounting, admissions, budget and planning, financial aid, and transportation. We do plan to phase out the mainframe within five years, as recommended by the external team that reviewed administrative computing in fall 2003. But in the meantime, we’re strategically updating the mainframe with newer technologies, often at very modest cost. Here’s what we did this year:

Tape technology: We’re storing more data using less floor space and have eliminated almost all tape and tape drives, while keeping maintenance costs the same or lower. How? We’ve eliminated our “round reel” 3422 (180 MB) magnetic tape, and most of our 3480 (200 MB) cartridge magnetic tape is following suit. These tapes took up valuable space and required operators to manually mount them. In fiscal year 2003, we plan to implement a third-party “virtual tape” solution that will enable us to further reduce the need for 3480 tape.

Most of our tapes can now be managed by tape robots, which occupy a fraction of the space and automatically mount tapes. We’re boosting storage capacity by replacing 3390E (800 MB) cartridge magnetic tape with 3590 (10 GB) cartridge magnetic tape. This was made possible by a gift from the Cornell Theory Center of a 3494 tape robot with eight 3590 tape drives and several thousand 3590 tapes.

Disk technology: We’re using the new Shark Enterprise Storage System in CIT’s storage farm for disk storage. And we now use a Shark feature called FlashCopy for backups. Its ability to create almost instantaneous “snapshots” of disk storage lets us drastically shorten how long systems must be unavailable while being backed up.

Printing: We’ve eliminated our last impact printer, which had been used to produce multiple-part forms. Most departments at Cornell have phased out these kinds of forms. We still print over 8 million pages a year on our two high-speed Xerox Documate. They will soon be replaced with newer versions that have better engines and better lease terms.

Upgrading the time-clock system
In January 2004, we rolled out a major upgrade of Kronos, the university’s time-clock system. Now about 250 supervisors and pay representatives can use the web to process the time recorded by the 2,202 or so staff who punch time clocks. In this 8-month project between CIT and Payroll, we installed new hardware with fully supported versions of Oracle and Windows, rewrote the interfaces with PeopleSoft, migrated from a client/server interface to a web-based system, and converted the database to a supported version of Oracle.

Improving access to admissions data
We have built or plan to build datamarts for most of the administrative areas at Cornell. Datamarts serve as bridges between multiple central administrative systems and the people who need to access data contained in those systems. They make it simpler to find the answers to complex questions, as well as to enable in-depth statistical analysis. This year, we spent 6 months working with staff from the Office of Undergraduate Admissions to build their datamart. Ad hoc querying (via Brio) is now much easier, and more staff can get richer information than they could before.

Automating Special Committee selection for the Graduate School
We are continuing to help the Graduate School develop administrative tools for managing degree requirements. This year, we designed a web application that graduate students will use to indicate which faculty members they have selected to oversee their course of study and thesis defense. Graduate field assistants, directors of graduate studies, and administrative staff will also use the tool. Released early in 2004, this online Special Committee Selection and Change (SCSC) web application replaces a labor-intensive manual process.

Pumping up Pinnacle
In July 2003, we upgraded the Pinnacle Communications Management System, our primary tool for tracking data and phone service requests and generating bills. It took a year of planning, preparation, development, and testing, but we now have a more robust application with many new functional features to support our business operations.

Bringing a better Natural on board
We completed a long-planned upgrade from Natural 2.18 to 3.16 in October 2003. The last major upgrade had been done 10 years ago. We worked closely with the 12 administrative areas that use Adabas and Natural to manage our business. Of the over 8,000 Natural objects currently in use, 641 required coding changes. All Natural programs were re-cataloged and tested. Along the way, we identified and deleted 409 obsolete programs.
Teaching and Learning

Supporting Innovative Teaching
innovation.cornell.edu

When asked how they might change their courses if money and time were no object, Cornell faculty have no difficulty coming up with ideas. Several want students in large classes to be able to make conjectures and argue their validity. Some want students to experience what team work and collaboration is like in industry. Others want students with no statistics background to be able to use real data to investigate puzzling questions. Still more wish students could experiment with costly lab techniques. And many dream of taking their students on field trips and doing research projects.

Encouraging instructional approaches like these is the goal of the Faculty Innovation in Teaching grants program, launched in 2001 and funded by the Office of the Provost. Through a competitive process, 16 grants are awarded annually by the college and school deans and 4 by the Faculty Advisory Board on Information Technologies (FABIT). To date, 58 grants have been awarded to faculty who seek to improve education by leveraging contemporary technologies in their teaching.

Our Distributed Learning Services group serves as the overall project coordinator and supports grant recipients with project planning, instructional design, classroom technology consulting, web programming, video production, and other services. Support is also provided through partnerships with Cornell University Library, the Center for Learning and Teaching, and the technical staff within the colleges and schools.

We also offer venues for faculty to share and discuss the technological solutions they are using to achieve their pedagogical goals, so the work of one grant recipient can be extended to any interested faculty member. One growing area of interest is in-class polling systems, where students use handheld devices to record their answers to questions posed by their instructors. How these systems are used ranges from serving as an anonymous gauge of the class’s comprehension to being part of a grading and participation assessment.

Pairing students and faculty on technology projects
www.lynx.cornell.edu

We are continuing to expand our Lynx (Student Technology Assistants) service. Started in 2001 with 22 students, this program now provides 65 expertly trained students to faculty who want to use instructional technologies. Faculty and teaching assistants get 15 hours of help a semester at no charge. Appointments can be made at the faculty member’s office, or in the Computing and Communications Center on the Ag Quad. During our regular hours, faculty can receive help the same day they request it.

The students we select for Lynx undergo intensive training not only in instructional technologies but also in interacting effectively with faculty. Our Academic Technologies staff delivers the comprehensive curriculum in collaboration with Cornell University Library and other service providers. By the end, Lynx students are poised to help with lectures, web sites, conference presentations, and online course components. They can do small-scale projects, consult on solutions to instructional challenges, and show faculty or their administrative assistants how to use tools such as Dreamweaver and Blackboard (formerly CourseInfo).

Making course web sites even easier
www.cit.cornell.edu/atic/cit

In June 2004, we upgraded CourseInfo, the course web site service we have offered since 1998, to the latest version, Blackboard 6. We migrated approximately 3,000 courses and 10,000 users. This upgrade followed a pilot project with a dozen faculty members who used Blackboard in the 2003-04 academic year.

Blackboard 6 gives instructors more flexibility in building and designing course web sites. Instructors are no longer locked in CourseInfo’s predetermined structure. They can rename navigational buttons, associate Blackboard tools with any button, create links to different parts of their site, and move content from one part to another, or even across courses they own.

Going forward, we expect to integrate Blackboard 6 with our NetID and Kerberos systems, so that instructors and students won’t need a separate username and password. We also hope to tap Blackboard 6’s ability to...
Sixteen classrooms at Cornell account for a third of all course enrollments. To see whether these classrooms, serving thousands of students each semester, offer an adequate array of instructional technologies, our Classroom Technologies group worked with local technical support providers to conduct a technological capability assessment.

The assessment, which was completed in early May 2004, found that 15 classrooms could benefit from improvements, in accordance with Cornell and International Communications Industries Association guidelines and standards of practice for advanced audiovisual technologies. In June 2004, we engaged in discussion with administrative and technical support staff in the colleges on improvements to be made in the classrooms and a schedule for accomplishing them in fiscal year 2005.

Creating a classroom audiovisual resources database

Access www.cit.cornell.edu/services/av

Cornell can outfit classrooms with the richest instructional technologies there are, but if faculty don’t know what’s there, much less how to use it or who to call when it doesn’t work, they will be less inclined to use these tools. Their time, especially during a class, is too precious to spend tinkering.

Some colleges, such as Engineering and Agriculture and Life Sciences, have made very good inroads here, providing detailed information on the resources of their classrooms. We wanted to expand their work to the entire campus.

So in spring 2004, we began building a classroom technology database for all Schedule 25 classrooms. A taskforce from those two colleges, the College of Arts and Sciences, the Office of the University Registrar, and CIT’s Web Production Group is guiding the project.

Initially, the classroom technology database will be a separate entity, but we expect that it will be tightly integrated with the next version of the Schedule 25 system (Resource 25), under development by the University Registrar.

In 2003, when the division of Media and Technology Services was dissolved, the Web Production Group and Educational Television Center joined our Distributed Learning Services group. Together, the groups represent a powerhouse of knowledge in leveraging technology to support Cornell’s academic mission.

The Distributed Learning Services group offers a wealth of services to faculty and instructional staff who want to use technology in teaching, from project design and development to course web site tools to classroom design and video services. The Web Production Group excels in designing elaborate web sites and building multimedia components and interactive tools. The Educational Television Center provides video production services ranging from basic professional recordings to public television documentary and entertainment programs. It also houses Cornell’s satellite television services.

Reviewing public computing labs

Access www.cit.cornell.edu/computing/computing.html

In September 2003, we completed a study of the state of CIT’s public computing labs. With a committee of students, faculty, and lab managers, we conducted focus groups and surveys aimed at assessing how faculty and students use labs and how we can better meet their needs. We also looked at how peer institutions are managing their labs.

Of the 1,140 lab computers on campus, CIT hosts about 21 percent. All of our computers, and about 61 percent of the others, are open to anyone in the campus community. The rest are restricted by college or department affiliation. More than 94 percent of lab computers run Windows or Windows plus Unix/Linux.

Almost 97 percent of students own computers (with over half being laptops or portable), demand for labs continues to be very high. Labs give students access to specialized software; a venue for collaborating on group projects; and a place to work between classes. They also fill a social niche for students through instant messaging, e-mail, and games.

The study results indicate that demand for labs will continue to grow, as computer-based tools (particularly software and high-end peripherals) play an increasingly prominent role in courses. The answer is not to open more labs; there simply isn’t enough space. Instead, the committee has recommended 14 steps we can take to position labs to meet some needs and make it easier for students to meet other needs using the computers they already have.

Since CIT is the central IT organization, the committee determined that we should be the driving force behind these recommendations.

We have already acted on two steps—creating a public computing roundtable to improve communications among lab managers across campus and aggressively expanding EdRo wireless service. Other recommendations include deploying a central server for course-specific software (application hosting) and a central file storage system; creating more collaborative spaces within labs; adding high-end peripherals to labs; and providing comprehensive support for student-owned laptops, from purchase to repair to short-term, on-campus storage. We’ll be looking at central file storage and application hosting first.

Including network access in housing rates

Recognizing that access to Cornell’s electronic resources is a vital and necessary part of the education experience, we collaborated with Campus Life to include the cost of our basic Residence Network Service (ResNet) in the room rates for undergraduate residence halls. This change ensures that all undergraduate students have a 24/7 connection to our network as well as the Internet, regardless of their financial status. It also reduces our administrative costs for ResNet, allowing us to turn that saving into better access for our students.

Doug Markant ‘04 (front), one of our Lynx students, helped Martina Bogges, lecture in German studies, and Scott Leslie ‘04 develop the “Nederklanken” web site, which shows students how native speakers pronounce Dutch sounds. Marge Woff (back) manages the Lynx program.

Lynx (Student Technology Assistants)

Welcoming television and web design maestros

Access www.dls.cornell.edu

The studio’s 30 maestros excel in designing elaborate web sites and building multimedia components and interactive tools. They provide a wealth of technical expertise, along with well-researched material and design skills.

With the Web Production Group, the Distributed Learning Services group, the Office of the University Registrar, and CIT’s Web Production Group, the studio provides student-run web sites and building multimedia components and interactive tools. They provide a wealth of technical expertise, along with well-researched material and design skills.

The studio’s 30 maestros excel in designing elaborate web sites and building multimedia components and interactive tools. They provide a wealth of technical expertise, along with well-researched material and design skills.

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Outreach

Collaborating without traveling
www.cit.cornell.edu/services/etv

With our new dedicated audiovisual distribution and control center, we are easily linking up rooms on campus as well as off-campus sites. We’re streaming live and archived audio/video through the web in multiple formats. And through multicasting via our data network, we’re capable of distributing audio/video directly to Cornell’s classrooms.

We’re also supporting multi-site videoconferences through our high-tech conference room in B08 Computing and Communications Center (C Coc.), opened in September 2003. We turned a white room with a low ceiling, multiple windows, and poor lighting into a flexible videoconferencing room.

This new light-blue room has both wired and wireless Internet access and seats up to 20 people. Conferences are managed with a self-explanatory, remote-controlled hand device that operates a portable presentation system; a Zenith 60-inch plasma screen; a DVD/VCR combination player; a sound system; Polycom’s iPower 9800, which features a camera controlled by a wireless keyboard; and a document camera system by Elmo that lets participants send paper documents, transparencies, and 3-D images to other sites. We provide operational support for each videoconference.

Reaching more through television
www.dls.cornell.edu/programs

In fall 2003, the Educational Television Center joined CIT, putting us in a great position to further expand our outreach work. Formerly part of the now-dissolved Media and Technology Services, ETV is the university’s primary link to the CNN’s, BBC’s, and Good Morning America’s of the world. Our studio room and satellite uplink enable Cornell faculty to share their expertise with millions of TV viewers. Our production includes live 3-D images to other sites. We work closely with Cornell’s Adult University (CAU) to produce CyberTower, a free web-based service that offers noncredit study with Cornell professors. Study rooms feature in-depth lectures along with resources for further self-study. Forums are moderated interviews on current issues. Views and Reviews are short lectures on current books, films, breaking news, or anything else that intrigues or infuriates faculty. A look at what CyberTower covered this year:

Study Rooms

• “Fine Art and Horticulture”
• “The China Project: Studying the Link between Diet and Disease”
• “Reading James Joyce’s Ulysses”
• “First Peoples, First Crops: Inquisitive Agriculture, Past and Present”
• “Jantar Mantar: The Astronomical Observatories of Jai Singh II”
• “Rembrandt’s Etchings: A Portrait in Black and White”

Forums

• May 2004: “Cascades Experiment: One Touch and Worlds Take Place”
• Apr. 2004: “A Conversation with Nate Brown, 121st editor-in-chief of The Cornell Daily Sun”
• Nov. 2003: “Bringing Up Baby: Evolution, Culture, Primate, and Humans”
• Sept. 2003: “Will the Social Security System Survive?”
• Aug. 2003: “A Conversation with Cornell President Jeffrey Lehman”

Views and Reviews

• Jan. 2004: “GBM as EEO”
• Dec. 2003: “Student Mental Health on College Campuses”
• Nov. 2003: “The American Civil War: The Military and the Political Dimension”
• Sept. 2003: “Murder at Mohenjo-daro: A Forensic Case Study from 4,000 Years Ago”
• Aug. 2003: “Religion on Campus”
• July 2003: “Leaving Children Behind: Who is Failing Whom? (Part 1)”
• June 2003: “Leaving Children Behind: Who is Failing Whom? (Part 2)”

Study Rooms

• May 2003: “Christianity in the Modern Middle East”
• Apr. 2003: “The World of Meiselas”
• Feb. 2003: “Religion on Campus”
• July 2003: “Should We Reinstate the Draft?”
• June 2003: “Religion on Campus”

Study Rooms

• May 2003: “Shock Therapy for Startup Entrepreneurs”
• Apr. 2003: “A Conversation with Nate Brown, 121st editor-in-chief of The Cornell Daily Sun”
• Dec. 2003: “Student Mental Health on College Campuses”
• Nov. 2003: “Bringing Up Baby: Evolution, Culture, Primate, and Humans”
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• Sept. 2003: “Will the Social Security System Survive?”
• Aug. 2003: “A Conversation with Cornell President Jeffrey Lehman”
Some of ETV’s production work this year included the inaugu-
ration of Cornell president Jeff Lehman (see article below); a behind-the-scenes documen-
tary about the Department of Theatre, Film and Dance’s 2003 production of Antigone (the
first Cornell play ever broadcast on public television); the Divi-
sion of Nutritional Sciences’s online course for plant-based
foods; a new dish and control room at Rhodes Hall.

Spotlighting Cornell’s research gems
www.explore.cornell.edu
Many of Cornell’s leading re-
search and instruction projects are essentially hidden from all
but the most persistent web
explorers. Even then, the suc-
cessful explorer typically has to
be well-versed in the subject to
make sense of the material. Our
Web Production Group saw a
challenge here. Could we make
some of these projects acces-
sible to the public? And not
just accessible, but so engaging
that people would learn about
difficult concepts accessible, we
would have to make them
valuable, and Cornell’s vast collection of
books and artifacts pertaining
to China, Japan, Korea, and
Tibet.

We design each edition of Exp-
lore Cornell in collaboration with Cornell faculty and staff.
In addition to research-oriented topics, Explore Cornell offers
virtual tours of the campus, re-
search facilities, and academic units.

Bringing inauguration
anywhere
inauguration.cornell.edu
From start to finish, the
inauguration of Jeffrey Sean
Lehman, Cornell’s 11th presi-
dent, celebrated his theme of a
plan for transport and routing of
data traffic to and from the
United States. Closer to home, we are also helping Cornell in
Washington with its expansion
projects by working with them on an IT plan for improved
data communications and ways to
improve IT efficiencies.

Exporting our expertise
beyond Ithaca
We helped the IT staff at the Weill Cornell Medical Center in
Doha, Qatar, develop a
plan for transport and routing of
data traffic to and from the
United States. Closer to home, we are also helping Cornell in
Washington with its expansion
projects by working with them on

Helping Cornell Cooperative Extension
www.cce.cornell.edu
In an effort to lower costs and
improve efficiency, Cornell
Cooperative Extension (CCE)
revised how it handles its
network connections, whether
they be through Ethernet or
dial-up/modem. In 2001-02,
we had helped CCE build wide
area networks connected to
T1 lines at each of their 56
extension offices. This year, we
helped them select and switch
to a new Internet service
provider. As of May 2004, 50
CCE offices had transitioned to
the new provider. We are also
helping CCE switch from oper-
ating their own dial-up/modem
service to using our EZ-Remote
service.

Connecting the Little Red to the Big Red
www.icsd112.nys.us
In September 2003, we worked
with staff in the Ithaca City
School District to connect their
network to ours through a
gigabit per second optical fiber
link. Although ICSD cannot
access the broader Internet
through this connection, it now
has faster access to resources
housed on Cornell’s networks,
such as web sites and digital
materials, and can participate in
videoconferences with uni-
versity faculty and staff.
Goal:
Support Cornell’s focus on research: CIT supports Cornell’s excellence in research by actively participating in nationwide efforts in support of scientific and experimental activity.

Progress:
- National LambdaRail
- Digital project coordination
- SPSS license
- Technical support

Research

Linking to the most powerful research net ever
www.nlr.net

Imagine a set of fiber-optic networks stretching across the country that could transmit up to 40 simultaneous light wavelengths (called lambdas), each of which could transmit 12 gigabits per second. Imagine that these networks give researchers direct control over the infrastructure, and that both production and experimental networks can be supported simultaneously.

That’s the dream of National LambdaRail, a consortium of U.S. research universities and private sector technology companies.

There’s nothing like National LambdaRail in the world right now. With speed like that, researchers could partner to do hugely complex computations and simulations on a scale never before possible. With control like that, researchers could develop new Internet technologies and protocols.

The first segment of National LambdaRail, from Chicago to Pittsburgh, was lit in November 2003, and the second, between Washington, D.C. and Atlanta, was lit in May 2004. The remaining segments on the “phase one” coast-to-coast path are expected to be lit by late August 2004.

In March 2004, the Board of Trustees approved Cornell participation in National LambdaRail. Through the Weill Cornell Medical College in New York City, we will be in “phase two” of the path, serving as the hub for New York State and New England. We have engineered a Cornell-owned fiber path to New York City and expect to have it in place by early fall 2004.

Exploring digital project coordination
CIT and Cornell University Library (CUL) have been collaborating to address the best ways to enhance coordination of projects that tap the university’s digital services. The team mapped what services are offered by CIT and CUL to see where we’re providing similar services, where we complement each other, and where there are gaps. Our next step is to investigate the viability of setting up a service that focuses on a proactive approach to managing requests for digital projects that span more than one service provider.

Supporting statistical analysis
www.cit.cornell.edu/software/licenses

Our Software Acquisition Service collaborated with the Cornell Institute for Social and Economic Research (CISER) on a new SPSS license agreement. This statistical analysis package is widely used at the university. Academic pricing for SPSS rose significantly this year; however, we were able to negotiate a reasonably priced package for Cornell’s faculty, staff, and students.

Providing technical support to researchers
www.cit.cornell.edu/software/licenses

Our services support many large research efforts at the university. A few examples:

- Lab of Ornithology (www.birds.cornell.edu): Our server hosting services and network infrastructure help the lab of Ornithology bring its rich array of multimedia resources on birds to millions of people. The lab’s web site offers songs, images, nest box cameras, research results, and “Citizen Science” studies, which engage people in research by having them do something as simple as note which birds come to a backyard bird feeder or which birds set up home in nest boxes.

- Nano/biotechnology Center (www.nbtc.cornell.edu): Our videoconferencing and streaming services are supporting collaboration among researchers at six institutions, K-12 educators, the Science Center Museum in Ithaca, and representatives from industry and the government. The Nanobiotechnology Center is a Science and Technology Center funded by the National Science Foundation.

- High-energy physics: This is one of the fields that depends on ready access to vast stores of data from other researchers. Cornell’s participation in National LambdaRail (see page 24) and the resulting coast-to-coast dedicated fiber networks will be an enormous help.

Diane Sempler (left), Eric Frederiksen, Tom Hickerson, associate university librarian, and Oya Rieger, assistant director for services and coordinator of distributed learning, are collaborating on ways to manage requests for digital projects that span more than one service provider.
General Campus Computing

Goal:
Support general campus computing: CIT supports the campus at large by delivering and supporting a collection of services and by maintaining a widespread IT infrastructure.

Progress:
- New e-mail system and services
- Update on uPortal.Cornell
- Electronic directory improvements
- Update on server and storage farms
- Cable TV options
- Student NetID changes
- New data cost recovery method
- Rate reductions
- Off-campus wiring

Nurturing a new e-mail system
www.cit.cornell.edu/computer/email

If you asked people which network service they couldn’t live without, e-mail would be very high on most people’s lists. It’s considered one of Cornell’s essential services. That’s why we spent most of 2003 upgrading the e-mail system to the most flexible, most secure system the university has ever had. That’s also why the problems that plagued our e-mail service this year were so troubling.

The good news first: Our new hardware offers better performance and greater reliability, and makes it possible to offer superior e-mail management tools to the community. One service, PureMessage, blocks viruses from ever being delivered, and tags spam messages so they’re easy to spot and delete.

Two other services, WebMail and uPortal.Cornell’s e-mail channel, let people access their e-mail from anywhere, using only a web browser (with IMAP behind the scenes).

The faithful Eudora, for people who want a powerful e-mail tool with the option for local storage, rounds out our suite of services.

Security is another big change for CIT’s e-mail system. No longer can NetID passwords be sent without protection of some kind. But that doesn’t stop people from being able to access their e-mail from anywhere. Our system works with Kerberos (software installed on individual computers), CU-WebLogin (a web-based tool), and TLS/SSL, a security tool built into almost every e-mail client there is.

The bad news: A black cloud hung over us for much of the year, shaking the community’s confidence in our ability to deliver the excellent e-mail service they had come to expect. In August 2004, hardware issues bumped against a world-wide e-mail virus epidemic that flooded the system with three times the normal amount of mail. A series of software problems followed, resulting in mail delays, unexpected outages, and the worst, loss of e-mail messages (made worse by the fact that it struck the same postoffice and the same group of people twice). And WebMail’s popularity exceeded our wildest expectations, creating some service delays.

The good news again: Our troubles are behind us. We put WebMail on hardware that is 3 times faster and made other changes to make it more responsive. We brought in systems engineers from our server vendor several times to troubleshoot, and we did extensive research and testing as well. Our vendor determined that their patch for a known software problem did not work as expected on our systems. After our last failure in January 2004, the vendor replaced the one postoffice that was seemingly cursed and it has been smooth sailing since.

Expanding your web, your way
uportal.cornell.edu

Being able to design your own view of Cornell’s vast web space turns out to be very popular. As of June 2004, we had 25,000 accounts on uPortal.Cornell. In summer 2003, we made the portal the primary source for our Bear Access services, and it is where all students go to use Just the Facts, the service that lets them check their grades, class schedule, and contact information.

In June 2004, we launched the “My Colleges” channel. Working closely with Student Services, we designed an easy way for each college to provide their incoming students with targeted information and announcements.

Other enhancements include our new e-mail channel (a complement to Eudora and WebMail, and our most popular channel); our Just the Facts channel; our updated weather channel, which lets you track multiple locations; and our classifieds channel.

PBX (Telephone Switch) Team

Jolene Comfort (left) and Kathy Parker support Cornell’s PBX (telephone switch), which links over 18,000 phones on campus with 99.997 percent reliability.
Improving the electronic directory
www.cit.cornell.edu/directory

Working with the Office of the University Registrar, we simplified what students must do to update their home address in our electronic directory. Students now update their home address in only one place, just the Facts. Updates made there are picked up by the university’s Student Information System, which then updates our directory once a night (instead of once a week).

Serving and storing more data
www.cit.cornell.edu/services/ serverfarm

During the past year, 57 more machines have “sprouted” in our server farm, bringing the total to 351 servers, including 84 owned by non-CIT departments, among them the Lab of Ornithology, Cornell Dining, and Cornell University Library.

Server Farm Growth (Fiscal Years 2001–2004)

<table>
<thead>
<tr>
<th>Year</th>
<th>Customer Servers</th>
<th>CE Servers</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY '01</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>FY '02</td>
<td>100</td>
<td>200</td>
</tr>
<tr>
<td>FY '03</td>
<td>150</td>
<td>300</td>
</tr>
<tr>
<td>FY '04</td>
<td>200</td>
<td>400</td>
</tr>
</tbody>
</table>

Exploring cable TV options

We are working with Campus Life to develop a cost-effective way to offer cable television in every Cornell residence hall room. Currently, most students can watch TV only in shared hall lounges. Because of Ithaca’s hilly, TV delivery options are limited to cable or satellite dish. Outfitting every room with coaxial cable would be cost prohibitive, so CIT and Campus Life are looking closely at delivering cable TV through our existing data network. It already reaches every room and it could easily support a service. If the price is right, students could be surfing between CNN and the “Simpsons” as early as spring 2005.

Handling student NetIDs differently

We took two big steps with student NetIDs—deactivating thousands of former students’ NetIDs, and giving NetIDs to new students in June instead of during registration in late August. Students use their NetIDs and passwords to gain access to our network services.

- NetID cleanup: We have reestablished the annual student NetID cleanup, after a few years of irregular activity. The process it will replace took so much effort it could only be done every few years. We did our last massive NetID cleanup in March 2004, deactivating over 50,000 NetIDs belonging to students who graduated prior to December 2003. We will continue improving the process to reduce the amount of manual effort required. Students whose NetIDs are deactivated lose access to most of Cornell’s internal resources, such as Net-Print, EZ-Remote, CU People, and the Cornell University Library Gateway. They can still use Just the Facts to check their grades or update their contact information.

- Network Port Fee (29%)
- Infrastructure Tax (50%)
- E-mail
- Course Web Page Listings
- uPortal.Cornell Help
- Bear Access
- WebMail
- Course Web Page Listings
- uPortal.Cornell “CUrrent” Channel
- E-mail
- Course Web Page Listings
- uPortal.Cornell Help
- Bear Access
- WebMail

Net mail forwarding service. This service lets them keep their “nethk@cornell.edu” address but instead of using our e-mail services, they read their mail through the Internet service provider of their choice.

- Fax to E-mail
- Telephone
- Courier
- Bear Access
- WebMail

Student IDs are now used for everything, from library access to dining hall payments. Many students have started using the service, which allows them to access their favorite TV channels even when they are off-campus.

- Fax to E-mail
- Telephone
- Courier
- Bear Access
- WebMail

Top Five Protocols on Cornell's Commodity Internet (Fiscal Year 2004)

<table>
<thead>
<tr>
<th>Protocol</th>
<th>In</th>
<th>Out</th>
</tr>
</thead>
<tbody>
<tr>
<td>FTP</td>
<td>200</td>
<td>300</td>
</tr>
<tr>
<td>HTTP</td>
<td>250</td>
<td>400</td>
</tr>
<tr>
<td>SMTP</td>
<td>300</td>
<td>500</td>
</tr>
<tr>
<td>FTP</td>
<td>400</td>
<td>600</td>
</tr>
<tr>
<td>HTTP</td>
<td>500</td>
<td>800</td>
</tr>
</tbody>
</table>

Top Ten Pages Requested on www.cit.cornell.edu (Fiscal Year 2004)

1. Computing at Cornell Home Page
2. Computing at Cornell Home Page
3. Computing at Cornell Home Page
4. Computing at Cornell Home Page
5. Computing at Cornell Home Page
6. Computing at Cornell Home Page
7. Computing at Cornell Home Page
8. Computing at Cornell Home Page
9. Computing at Cornell Home Page
10. Computing at Cornell Home Page

Recovering network costs the new way
nubb.cornell.edu

In July 2003, we began recovering our costs for the data network in a new way. Our new model has three components:

- Network Port Fee
- Infrastructure Tax
- E-mail

The usage fee is where an individual’s behavior matters most. We charge a flat usage fee for up to 2 GB of Internet usage per month, and then bill for excess usage by the megabyte. To help individuals and network administration track usage, we implemented two tools: the Network Usage-Based Billing (NUBB) system and Cornell Log.

In July 2003, we began recovering our costs for the data network in a new way. Our new model has three components:

- Network Port Fee
- Infrastructure Tax
- E-mail

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Component of Data Network Recovery (Fiscal Year 2004)

- Network Port Fee (29%)
- Infrastructure Tax (50%)
- Public Port Tax (6%)
- Usage Fee (15%)

Component of Data Network Recovery (Fiscal Year 2004)

- Network Port Fee (29%)
- Infrastructure Tax (50%)
- Public Port Tax (6%)
- Usage Fee (15%)

When the power went out the late afternoon of Aug. 14, 2003, we were ready. Our emergency plan was in place, and we’d been through power outages before. Our generators could run our services for 3 hours, plenty of time to shut down if need be. Then we found out the entire Northeast was dark. Cornell had lost the ability to cool its buildings, and the only communications tool that worked in the dark was the old-fashioned telephone.

Key CIT staff hurried to help our second- and third-shift Network Operations Center staff. Throughout the night, we worked with Cornell’s Facilities division to set our strategy. As temperatures steadily climbed in our machine room, we decided to shut down most services at about 7:30 p.m.

When cooling was restored at about 10 p.m., we began bringing our services back online, but then shut them down again after learning that NYSEG could only supply limited power to the university. From about midnight to 6 a.m., only essential services such as e-mail and security services remained up. Then we were able to restore the rest of our services, and a tired but thankful staff worked the job done by about 8:30 a.m.

Northeast power outage

Electronic Directory Searches (Fiscal Year 2004)
Log is a free Windows application that individuals can set to run in the background and tally their Internet usage. While it’s not as precise as NUBB, it provides a good indicator and is more convenient.

Since we began charging a usage fee, we’ve seen a significant decline (15 percent) in Internet usage among students and a modest increase (15 percent) among faculty and staff. Our numbers indicate that most students, faculty, and staff find the 2-GF limit adequate. An average 25 percent of students and 5 percent of faculty and staff were billed for excess usage this year. With this success in encouraging more prudent use of our Internet resources, we have avoided the tremendous expense of an additional Internet connection or the deployment of more intrusive and restrictive usage controls.

Dropping our prices
- EZ-Backup (www.ezbackup.cornell.edu/services): In January 2004, we reduced the base rate for the usage fee portion of our network rates by 25 percent, and the rate for excess usage by 33 percent. This fiscal year, we implemented a new, three-part model for recovering network costs. Our initial rates for the usage fee reflected assumptions about what effect the new model would have. Once we had several months of actual data, we were able to lower the usage fee.
- Voice and data (www.cit.cornell.edu/services): In January 2004, we negotiated our Verizon Wireless contract pricing for their corporate and employee Verizon cell phone accounts.

Extending our network off campus
We brought our high-speed, high-quality phone and data services to six more off-campus areas: Maplewood Apartments (graduate student and domicile group housing), 112 Edgemont (undergraduate housing), 330 Triphammer (i-Phi Beta Phi sorority), the James A. Baker Institute for Animal Health, the Cornell Institute for Social and Economic Research, and Cornell president Jeff Lehman’s residence.

Our standard, switched data service, with speeds up to a gigabyte per second, is far faster and less expensive than the other options available to these facilities. And it has the added benefit of lowering costs for everyone at Cornell, since our rates are based directly on the number of people using our services.

RedRover wireless
www.cit.cornell.edu/redrover

We now offer our RedRover service in 34 locations and support WEP (an encryption protocol) and handheld devices such as Palm Pilots and Visors. We are moving to a new wireless technology that is five times faster than the existing network and offers improved security and enhanced administrative tools. We are also testing other wireless applications such as camcorders and outdoor connectivity.

Email Messages via CIT’s Postoffices
(Fiscal Years 1995–2004)

<table>
<thead>
<tr>
<th>Year</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td></td>
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Goal:
Support development of Cornell Information Technologies: CIT pursues long-term organizational development goals in order to enhance its ability to meet customer needs, provide IT leadership, improve organizational and individual performance, and manage projects.

Progress:
- New human resources director
- Customer Satisfaction Survey results
- Quality of Work Life findings
- Employee Leadership Program
- Project management initiative
- Refined mission and values
- Strategic plan improvements
- Products and services list

Taking the lead on human resources
In August 2003, Linda Croll joined us as director of human resources and organizational development. In her first year, she has made CIT a better place to work. Linda launched our Employee Leadership Program and, working with a CIT-wide group, simplified our values statement (see articles on pages 13–14). She separated career development planning from our performance review process, so that our staff and managers do not have to look back and look ahead at the same time. She also made changes in our Quality of Work Life Survey to address our values more comprehensively, and to因为 in other work issues raised by our staff.

Before coming to Cornell, Linda was senior vice president and director of human resources at Grey Global Inc., a global marketing communications company. Some of her accomplishments over 5 years: building the human resources function for a new holding company; developing human resources technologies, including an employee intellectual capital database and electronic assessments; creating professional skills and leadership courses; and partnering with human resources directors worldwide to ensure consistent practice and policy.

Measuring how well we meet campus needs
Once a year, we do a customer survey among faculty, staff, and students on the Ithaca campus. With the help of Communications and Marketing Services, we distributed a 12-question postcard in February 2004. We offered everyone who returned the survey by the deadline a chance to win one of five $75 gift certificates to the local restaurant of the winner’s choice.

Over 18,800 surveys were sent out, and about 1,802 were returned. This has been our typical response rate since our first survey in 2001. Of the respondents, 79.7% report using a PC (Windows or DOS) system, 16.3% Macintosh, 3.2% UNIX, and 0.8% mainframe.

Our 2004 results (see next page) showed significant improvement in 2 of the 10 areas surveyed. The community is happier with the value they receive for the price, and with our degree of innovation. The community’s overall rating of the quality of our services and facilities correlates most highly with their satisfaction with the speed and convenience of our services, as well as the variety of services we provide.
Making CIT a better place to work
Every spring, our staff are anonymously surveyed on how they feel about working at CIT. The survey reports on employee/supervisor relationships, opportunities for growth, job satisfaction, compensation, perceptions of trust and fairness, and the general quality of work (QWL) at CIT. About 60 percent of our staff completed the 2003 survey, up from 60 percent the previous year.

A team of seven staff reviews the results and recommends ways that CIT can improve its quality of work life. This year’s QWL team identified the climate/work environment, fair treatment, and trust in management as the areas where staff seemed most dissatisfied. Among their recommendations, which were adopted by our directors and managers, are:

- Clarifying policies regarding promotions, raises, bonuses, time tracking, and work schedules and ensuring policies are applied consistently across our divisions
- Articulating career paths for staff and identifying staff with strong potential for advancement
- Promoting more local recognition for successes
- Improving decision-making by allowing more input from technical staff and communicating the thinking behind decisions
- Increasing communication among our divisions and within workgroups
- Creating leadership teams that speak with one consistent voice across our divisions
- Linking specific projects to our strategic plan and values
- Integrating issues of trust in our Employee Leadership Program

Bringing out the leader in everyone
In 2003, our top management completed the Cornell University Leadership Development Program, an 11-day course whose assessment tools, simulations, models, and team-building exercises proved invaluable to building a more effective, unified leadership team. We were so impressed that we wanted everyone in CIT to have the experience. Linda Croll, our director of human resources and organizational development, drew on the staff leadership program used in Administration, Facilities, and Finance to develop the Employee Leadership Program for CIT. About every six weeks, we gather 20-24 staff from across our divisions for an intense, week-long program that covers CIT values in practice, leadership styles, the Myers-Briggs Type Indicator, feedback, listening skills, perception versus reality, conflict management, personnel values and trust, service relationships, teamwork, and change management.

Refining leadership skills is our main goal, but the program also aims to build strong bonds across the organization and renew our sense of work as a source of creativity, energy, and fun. We use several strategies to make sure leadership skills are integrated, supported, and rewarded. Our first group came from...
Taking a common approach to project management

In January 2004, we began a 2-year pilot program to significantly increase CIT’s project management capabilities. We have established an internal project management consultancy practice to create a comprehensive program for us.

We are adopting the Princeton methodology for Cornell use and developing associated tools and templates. Their work is also being reviewed by our project partners outside CIT, particularly those in the administrative systems areas. In June 2004, we began a pilot with 6 projects. Creating a training program, looking at automated tools, and starting a forum for professional exchange are some of the tasks we expect to do in fiscal year 2005.

Our mission statement is now a sleek 33 words reflecting what we strive to do and why. We migrated the “who” and the “how” pieces to our strategic plan and values statement. Our values statement now centers on 5 core principles, instead of 7, and is 60 percent shorter. Our core values:

- Innovation: Think differently, deliver better
- Community: Working together we all will succeed
- Results: We are responsible for what we do and say
- Respect: We care about each other, and we show it
- Integrity: We say what we mean and do what we say

Reframing our strategic plan

Every year we update our 4-year strategic plan to reflect the emerging requirements of the Cornell community. That plan, in turn, informs our 5-year capital plan and our 1-year divisional business plans, service/program plans and operating budgets, and project plans and budgets for one-time projects.

This year we improved our strategic plan by more clearly aligning it with our mission and values, by citing how goals are tied to specific initiatives and services, and by soliciting guidance from several campus groups, including the Dean of the Faculty, the Campus Officers Group, the Faculty Advisory Board on Information Technologies and Cornell’s Computing Directors. We also added divisional business planning as a component of the planning process. We will produce an integrated CIT business plan report documenting our priorities for the coming year.

Refining our strategic plan

www.cit.cornell.edu/strategicplan.pdf

Making our values memorable

www.cit.cornell.edu/cit/mission_values.html

In 2002, we agreed on a set of values to guide how we perform at CIT. So many ideas needed to be captured that our values statement was quite lengthy, and certainly nothing any of us could recite from memory. So we took another look, to see if we could simplify without watering down or losing principles we held dear. We revisited our mission statement at the same time.

CIT’s project management initiative is being led by Catherine McManus (left), along with Bill Turner, Donna Craighead, Nancy Voorhees, Laurie Cuffe, Erica Jessup, Donna Taber, Pat Nelson, Tom Thoerner, and (not shown) Noni Vidal and Michelle Reynolds.

Building a list of products and services

One constructive criticism we’ve heard from the campus community is that it’s sometimes hard to figure out CIT—what we do and don’t do, who does what, and where to direct questions or calls for help. We know that’s true, and this year, we set up an internal taskforce to solve this conundrum.

Though readers outside Cornell may, perhaps, be surprised at where we had to start, anyone familiar with the university’s decentralization won’t be. Because CIT is also decentralized to some extent, our first step was to agree on what we mean when we say “support” a service. Our next step was to identify all of the products and services that are supported by CIT and for whom we provide this support. As part of that effort, we also identified points of contact, at minimum naming the responsible unit and, in many cases, naming specific individuals.

As of April 2004, CIT provided support for 216 products and services. Of these, 42 are owned by a unit other than CIT, though we provide the technical support. Our next major steps are developing a database to house this wealth of information and creating the much-desired web page where the community can easily find out what we do and who does it.

A few days later, a comprehensive program to support the university’s project management capabilities.
Measuring What CIT Does

Academic support
Classrooms (Schedule 25) with active network connections: 95%...with data and video projectors: 75%...Courses with active CIT-supported web sites: 3,840...number using Blackboard (CounselorNet): 3,015...Courses using videostreaming services: 127...surveys created with CIT survey tools: 475...requests by 253 people...Class sessions hosted in CIT's instructional computer labs: 1,026...hours of instruction)...Computers labs—computers supported by CIT's lab group: 335...Academic Technology Center workshops and events: 68...workshop participants: 826...Academic Technology Center custom-requested workshops: 21...Academic Technology Center walk-in consultations: 543 (171 individuals)...Lynx Student Technology Assistant appointments: 104...hours)...projects: 33 (241 hours)...Video support provided: 20...videoconferences; 62...multisite videoteleconferences; 7...large special events...Average visits to a week to CyberTower from non-Cornell addresses: 1,260...Students completing CIT's online "Travelers of the Electronic Highway": 3,726

Academic system support
Data in Cornell's central administrative databases: 302 gigabytes...Human Resources/Payroll users of Actuate/PEDL: 988...Actuate Human Resources/Payroll reports delivered each month: 3,302 (193,444 pages)...Human Resources/Payroll datasets delivered each month: 6,965 (.452 megabytes)

General campus services
Best Access (CornellNet's package of popular Internet and local administrative services)—times used in a year: 17 million...CIT-Alert-L (mailing list for notifying community about computer viruses and significant service outages)—messages sent: 29...CIT/RivKes Hall high-speed laser printing—pages printed: 8.26 million (average 120 pages per job)...Contact Center (HelpDesk)—requests for help (phone, e-mail, walk-in): 1.05 million...Contact Center (HelpDesk)—requests for help by constituency: 12% faculty; 25% staff; 55% students; 3% retirees; 1% alumni; 4% other...Contact Center (HelpDesk)—callers who hung up after being put on hold: 10.8%...Contact Center (HelpDesk)—on-site consultations: 99...CJU People (free web hosting for personal pages)—accounts: 8,730 (7% faculty; 17.5% staff; 56.5% students; 19% other)...CJUInfo—average visits in a year: 6.83 million...CUWebLogin—authentication services in a year: 8.13 million...Electronic directory—searches per day: 2.44 million...E-mail—messages routed in a year: 961.26 million...E-mail—logging hits: 3.150 (328,000 subscribers, 153,500 unique addresses)...E-mail—special mailboxes (e-mail accounts set up for a business purpose): 412...Employee Essentials—average visits per day: 5,494...Express Lane (free, time-limited dial-up service) mods: 46 on 2 T1 lines...Express Lane individual users: estimated 3,002...EZ-Backup: 72.8 terabytes of data backed up on 2,736 computers and servers...EZ-Remote (paid, dial-up service) mods: 368 on 16 T1 lines...EZ-Remote individual users: 2,903...Just the Facts—times used in a year: 1.03 million...NetIDs created: 15,043...Net-Print (CIT's lab-based laser printing service)—pages printed in CIT labs: 2.30 million pages (487,222 jobs)...Net-Print—pages printed in non-CIT labs: 3.18 million pages (1,07 million jobs)...Network—active data ports: 25,000...Network—data going over campus network daily: 3.85 terabytes...Network—unique devices connected: 53,000...Network—work orders (moves, adds, changes, disconnects, swaps): 14,676...Network Operations Center—complaints made about alleged computer policy violations, electronic copyright violations, and other types of computer-related abuse: 1,260 a month (2nd shift NOC)...Network Operations Center—manual DNS entries: 830 (1st shift NOC)...Network Operations Center—phone calls: 1,870 a month (3rd shift NOC)...Network Operations Center—problem reports: 12,791 (3rd shift NOC)...Network Operations Center—scan/Probe reports: 136,935, of which 52,111 were stopped (3rd shift NOC)...Symantec AntiVirus downloads: 21,055 files (31.3 gigabytes)...Oracle Calendar (university-wide personal calendar and meeting scheduling service) users: 7,583...Phones—assigned phone jacks: 18,347...Phones—AUDIX messages in a week: 37,367...Phones—calls made in a week: 73,136 local; 38,772 long distance; 1,362 international; 4,335 toll free...Phones—reliability of phone system: 99.997%...RedRover wireless access points: 185 in 35 buildings...Security—blocks against specific hosts' network access: 550 a day (with 400 against off-campus systems)...Security—Edge ACL service: 215 department subnets (representing 58 departments) and all 100 ResNet subnets...Security—vulnerability assessment service: over 10,000 system assessments plus regular assessments of all 100 ResNet subnets; 85 department subnets doing own assessments...Servers: 345...Software licensing—savings compared to educational retail pricing: $2.1 million (excluding Oracle, Symantec, and Eudora)...Software licensing—software titles and packages: 23 (including major contracts with Oracle, Microsoft, Adobe, SAS Institute)

CIT staff and business measures
Staff hired: 31 (new to Cornell)...Average years of service by our staff: 11.48 (8.58 with CIT)...Staff with 10 years of service: 100...with 20: 62...Number of CIT purchasing/accounts payable, payroll, capital assets, and facilities transactions processed: 41,172

This annual report covers the July 1, 2003, to June 30, 2004, period. All staff listings reflect staff employed through June 2004. Many thanks to Leslie Internmann for handling photography and assisting with production. Jan Jesmer for gathering the metrics. Jacqui Benedict, Jen Russler, Jan Jesmer, Kurt Larsen, Diane Lukosavich, and Donna Poole for their help with distribution. Everyone who provided information and reviewed drafts. Everyone we photographed to help show the diverse community in which we work.