

RUTGERS UNIVERSITY  
COMPUTING SERVICES  
ACCOUNTABILITY REPORT

1998 / 1999

MICHAEL V. MCKAY  
EXECUTIVE DIRECTOR FOR COMPUTING  
AND INFORMATION TECHNOLOGY

RUTGERS UNIVERSITY COMPUTING SERVICES

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## RUTGERS UNIVERSITY COMPUTING SERVICES

Rutgers University Computing Services (RUCS) is the University's centralized computing and telecommunications support organization. It consists of three campus-based divisions on the Newark, Camden and New Brunswick campuses, as well as two University-wide divisions supporting administrative computing and telecommunications services. The 220-member computing services staff collectively provide support for voice and data networking services, centralized batch and timesharing computing platforms, administrative applications software, and instructional computing resources in support of Rutgers' threefold mission of instruction, research, and public service. The Executive Director of Computing Services reports to the Vice President for Institutional Research and Planning and is a member of the University's Administrative Council (a group including the vice presidents, provosts, and deans) and the University Senate. The Vice President for Institutional Research and Planning reports to the President and is a member of the President's Cabinet.

Campus-based computing services divisions each maintain centralized data centers which provide general-purpose academic computing systems and software support on the Camden, Newark and New Brunswick campuses as well as operating and maintaining student computing labs. The Administrative Computing Services Division maintains a centralized mainframe data center that provides and supports the primary administrative applications for supporting the core business functions of the university. The Telecommunication Division supports University-wide voice and data networking connectivity throughout Rutgers.

The Executive Director and Directors are supported by a staff consisting of an Assistant to the Executive Director, Human Resource Manager, Business Manager and a Senior Executive Assistant for Communications. The Assistant to the Executive Director coordinates the divisional support activities of the staff.

### EXECUTIVE SUMMARY

This report summarizes the highlights and accomplishments of Rutgers University Computing Services for Fiscal Year 1999 and presents the goals for Fiscal Year 2000. The 280 full-time employees and 633 part-time staff including student assistants of Rutgers University Computing Services provide university-wide leadership in Information Technology and quality Information Technology services in support of the University's mission of instruction, research and service to 48,000 students, 11,000 staff and faculty and the residents of the State of New Jersey.

The information age has resulted in the institution's growing dependence on the services and facilities this organization provides. A clear indication of the value that the university places in our contribution was its strong support and the Board of Governor's approval of the RUNet 2000 project – the largest single construction project in the University's history. A description of this and other major highlights over the past year follows:

## *RUNet 2000*

The RUNet 2000 project will result in a comprehensive and advanced communications infrastructure, which is designed to meet the institution's needs for voice, data and video. Following an extensive evaluation process, the project and its nearly \$100 million funding plan received the approval and endorsement of the Rutgers' Board of Governors in July 1998. A contract with Bell Atlantic Network Integration, Inc was signed in September 1998. As the largest project of its kind at a major public university, RUNet 2000 has attracted significant attention from business, industry and government throughout the United States. This has already resulted in the influx of several million dollars of funding for the project. In April 1999 \$2.5 million was received from the Department of Education to build and extend the network to public K-12 facilities in Camden and Newark. Indications are that this funding will increase by up to \$7.5 million in future years. Additionally, Sun Microsystems provided a major donation toward the \$7 million purchase of two Sun Enterprise 10000 massively parallel computers to Rutgers for the purpose of developing applications that will run on the high bandwidth network being constructed by the RUNet 2000 project. The advent of these two computers has elevated Rutgers to the rank of 80<sup>th</sup> in the world in computing power. Other opportunities to attract business, industry and government to support the RUNet 2000 project are expected in the future.

## *Commitment to Excellence*

With the assistance of the Office of Quality and Communications Improvement led by Brent Ruben, the organization charged six process teams with developing recommendations for improving University Computing Services' operations. These committees have rendered their reports. The fact that many of the recommendations have been implemented and others are in the process of implementation speaks volumes for the high quality of the committees' performance. The analysis of the data has already resulted in a \$2 million increase to the Fiscal Year 2000 budget and a detailed study of the organization's salary scale. Copies of all six reports can be found at: <http://rucs.rutgers.edu/cte>.

## *Year 2000 (Y2K) Compliance*

Y2K compliance has been a major priority and has occupied approximately 30% of Administrative Computing Services' staff time as well as some staff time in other divisions. Within Administrative Computing Services, all mainframe applications have now been enhanced and tested for Y2K compliance. From a Y2K infrastructure perspective, a complete analysis of administrative computing equipment, software, and networks was prepared early in the year. The mainframe Y2K infrastructure was subsequently implemented in the spring along with Y2K compliant versions of the mainframe operating system, system software packages and the database that runs the large portion of the financial and student systems. A total of 29 major system

software products were replaced. A combined team from Computer Repair and the Microcomputer Service Support Group are testing hardware and software applications for Y2K compliance throughout the University.

### *ARTSYS*

In partnership with the Office of Enrollment Management, the ARTSYS project was initiated to provide course articulation between New Jersey community colleges and Rutgers and to provide a mechanism for transmission of electronic transcripts from the community colleges to Rutgers. In the fall of 1998, Rutgers purchased ARTSYS software and began the process of incorporating New Jersey community colleges into this project. By the end of 1998, all nineteen community colleges had signed an agreement with Rutgers to participate in ARTSYS. Through the first half of 1999, the community colleges and Rutgers colleges have been providing course articulation data that will be centrally maintained via the ARTSYS system. Implementation of the transfer articulation phase will be completed during September, 1999. The E-transcript phase of the project was kicked-off in June, 1999 with a target for completion by March, 2000.

### *Internet2 (I2)*

An OC3 (155 Mbit) link to the very high speed backbone network system (vBNS) was completed in October 1998. During the year, Computing Services asked the assistance of the university's Research Advisory Board (RAB) to help determine those faculty whose laboratories or offices should receive early Internet2 connectivity. Selection was based on such factors as geography, engineering feasibility, costs, available budgetary resources, criticality of need, and scheduled implementation of the RUNet 2000 backbone during FY 2000. Those whose laboratories were selected for direct connections are all working collaboratively with researchers at other Internet2-participating institutions. Within the first six months of Fiscal Year 2000, connections are expected to be made to the Biomedical Engineering modular building, the College of Pharmacy, the CoRE Building, the School of Engineering, the Library of Science and Medicine, the Nelson Biology Laboratories, the Serin Physics Laboratory, and the Wright-Rieman labs, all on the Busch campus; the Kilmer library on the Livingston Campus; the Graduate School of Education and Alexander Library on College Avenue; the Douglass Library on the Douglass Campus, and the Aidekman Research Center on the Newark Campus.

### *Student Fee*

University Computing Services received 20% of the student computing fees for the fall and spring terms to support infrastructure used by students, including UNIX servers, accounts for access to open access labs, personalized web pages, email, Internet access and statistical and other software licenses. Support was provided for in-

frastructure on all three campuses: Camden – email and Novell servers, backup drives and disc space and upgrades to Ethernet switches; New Brunswick – upgrades for Ethernet switches, four system upgrades and additional backup drives and disc space; Newark – upgrade to some Ethernet switches, an email server and hardware for 48 modems.

### *Student Telephone System (STS)*

The Student Telephone Service (STS) completed its second year in operation and has been well received by the Rutgers University student population. Approximately 50 presentations were made when the STS program first began. Last year 10 presentations were conducted while only a small handful of requests were made for this fall's orientation, indicating a general acceptance of the program.

### *Email*

During the last year, two major steps were taken in moving email to the new style: (1) Support for Internet Messaging Access Protocol (IMAP) is now complete. IMAP is the technology that Netscape and other desktop software requires to read mail from a central server. All users are now being encouraged to read email via Netscape or other desktop tools. (2) We set up dedicated mail servers for both faculty/staff and student clusters. These servers have enough redundancy that we can do upgrades and other changes without affecting service to the users. This allows us to provide high uptime for email.

### *Livingston Pilot Becomes Ongoing Departmental Support*

During the last several years, many of our new services have been focused on supporting departmental computing staff. With strategic guidance from The New Brunswick Computing Advisory Committee, we piloted this program by placing staff on the Livingston campus. During the spring of 1999, an evaluation of the Livingston Pilot was conducted with the assistance of two consultants from the University of Indiana. The study concluded that this was a good model to be migrated throughout the University. This marks the end of the Livingston Pilot. At this point the services envisioned for the Pilot have largely been integrated into the overall offerings of New Brunswick Computing Services (NBCS). This includes training for departmental staff, second-level support aimed specifically at them, web-based resources, regular meetings, and a mailing list. One important outcome of this new orientation has been creation of an active community of departmental staff, who interact regularly with each other and with University Computing Services' staff.

### *Web Initiatives*

The Multi-year Plan for Administrative Computing called for expanded use of web technology to leveraging existing business logic and systems. To this end, numerous new Web applications were released during the year aimed at improving services for current and prospective students, faculty, staff, and administrators. Some of the new Web applications and their benefits to the University follow:

#### *On-line Schedule of Classes*

This dynamic web site enables students to view the current semester's schedule of classes on-line. Students can now search for classes by campus, level of study, location, time and course level. The schedule of classes information includes – the availability of the class, the days and times and locations offered, prerequisites, and maps of the building locations. The On-line Schedule of Classes provides students with much easier access and more complete data on Rutgers classes than the paper format.

#### *Student Program Slips*

This component of the Transcript and Grade web application enables students to view their current course schedule of classes complete with time, location, and on-line maps.

#### *Graduate Admissions on the Web*

The Graduate Admissions web site and application enables applicants to apply for graduate study at Rutgers on the Web. Functions include:

- Web application for graduate study at Rutgers
- Web request form for hard copy catalogs
- Web database driven Graduate index of programs with links to departmental web sites
- Web administrative interface for managing web-submitted applications
- Backend batch interfaces for uploading to the Student Records Database.

System benefits include the ability to apply on-line, a more integrated presentation of graduate programs, and a minimizing of data entry. The system also significantly improves the processing of graduate information requests and captures the data electronically for further follow-up.

#### *On-line Transaction Adjustments*

The Oracle/Web Transaction Adjustment Table application was implemented the end of December. The benefits of this Web application are to allow customers in the Student Financial Services to easily view, add, and update transaction codes, descriptions, account and object codes, and summary codes used in the adjustment process. Before the development of this new application, ACS programmers,

data control operators, and database administrators were all needed for the updates.

*Web Grade Reporting Enhancements*

In response to an email suggestion from a student, the Web display for on-line grades was enhanced to include an indicator designating whether or not the grade was temporary.

Rutgers University Computing Services  
I. MANAGEMENT AND STAFFING

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A. QUALITY AND COMMUNICATION IMPROVEMENT

The organization's "Commitment to Excellence" Quality and Communication Improvement initiative resulted in the establishment of six committees, which were charged with gathering and analyzing data, and providing recommendations. The following committees completed their missions during this fiscal year:

- Human Resource
- Process Identification
- Customer Identification and Needs
- Performance Indicators
- Support Strategy
- Communication

The findings of these committees have proven to be most helpful in identifying University Computing Services needs and recommending quality improvement initiatives. Copies of these reports can be found on our web page (<http://ruc.rutgers.edu/cte>). Among other findings derived from these reports, one became abundantly clear—University Computing Services is under staffed and under funded to accomplish its mission. For example, since 1990 state funded lines have been reduced by 2.5 full-time employees and the below the line budget has been reduced in actual dollars by 32%. During this same time frame the organization's administrative and technical responsibilities have increased dramatically as can be seen by the following chart:

SUPPORTED ACTIVITIES/DEVICES	1990	1999
Computer Accounts	5,000	55,000+
Modems	48	1,500+
Subnets	140	1,000+
Network Devices	2,500	26,000

We have been accomplishing more with less but there has been a toll taken. Our employees have been overworked and the level and quality of service provided the user community has been diminished. Overwork, inadequate resources and the higher salaries offered information technology qualified individuals by local business and industry, has resulted in an inordinately high number of personnel resignations. Recognizing the severity of this situation, the administration has authorized the hir-

ing of an additional 23 personnel over the next 18 months and our below the line budget has been increased by \$700,000.

## B. STAFFING

71 individuals (nearly twice that of last year) were hired into the following job families during the fiscal year:

NUMBER	AREA
5	Administration & Clerical
11	Applications Development
13	Management
12	Network Engineers
3	Network Technician
5	Operations/Production
12	Systems
10	User Services & Support

35 positions were unfilled at the conclusion of Fiscal Year 1998/99. Active recruitment occurred during the fiscal year through such venues as:

- RU APS Postings
- National and local newspaper advertising
- Advertisement in computer and management publications
- Posting on Technical Organization Listservs
- Search Firms
- Job Fairs
- Student Training/Mentoring
- Referrals

### *New Staff Orientation Program*

University Computing Services implemented a new employee orientation program this year. The program describes the organization's mission, vision and values, provides new employees the opportunity to meet others and instills a sense of community. Two full-day sessions were held on March 2nd and 3rd to accommodate the forty-six attendees. The program consisted of a welcome by the Executive Director and an overview presentation by the five Division Directors. Following a luncheon, employees were taken on a tour of mainframe operations in Hill Center and ASB, student computing facilities in Hill Center and on College Avenue, the Computer Store, the Hill Information Center and Instructional Lab, the Livingston Pilot site, and Administrative Computing Services programming and data entry sites.

### *Performance Appraisal Program*

In preparation for the FY 1998/99 Performance Development Program, nine supervisors were trained to deliver Performance Appraisal training to all Administrative/Professional/Supervisory (APS) staff.

### C. THE STUDENT FEE

Computing Services received 20% of the fall and spring term student computing fee funds. These funds were used to support UNIX servers, providing accounts for access to open access labs, personalized web pages, email, Internet access, statistical and other software licenses. The funds also provided support for software licenses and the RUNet 2000 initiative. This portion of the fee discussed here does not include the funds used to operate the public computer labs, as they are allocated by campus allocation committees.

#### *Student services provided by the Student Computing Fee:*

- Obtaining an account
- Connection to the network
- Email, web and directory services, and direct authentication support
- Academic instructional computing support
- Computing site licenses
- 1 year account extension to alumni
- Improved web based services

#### *Purchased by the Computing Fee to improve, enhance and maintain service:*

- Purchase of a data analyzer (to improve dial-up diagnostics)
- Support of Rutgers University Libraries with support for online information
- Licensed software
- Maintenance
- Supplies for UNIX servers
- Line charges
- Maintenance for 456 dial-up modems
- Maintenance of the RUNet 2000 gateways and Internet access
- Plus all of the following:

CAMDEN CAMPUS	NEW BRUNSWICK CAMPUS	NEWARK CAMPUS
Email Server	Ethernet switches	Email server
Backup Drive	Upgrade of 4 systems	Ethernet switch
Disk Space	Additional backup drive	Hardware for 48 modems
Novell Server	Disk Space	GPS Time server
Ethernet Switch		

#### D. PUBLIC AWARENESS

Presentations describing Computing Services, RUNet 2000, and Internet2 were provided by the executive director to the University Libraries Cabinet, the Rutgers Admissions Sounding Board, the Year of the Network Coordinating Council, and Admissions Workshops. Administrative Computing Services staff presented and moderated a round table discussion on electronic applications at a New Jersey chapter meeting of the National Association of Graduate Admissions Professionals, attended by representatives from Rutgers, New Jersey Institute of Technology, Stevens Institute of Technology, Rowan University, Montclair University, and The College of New Jersey.

Computing Services staff coordinated a high technology exhibit involving faculty and staff from throughout the university at a career fair sponsored by then Congressman Michael Pappas in October.

Federal funding for extending RUNet 2000 construction to K-12 entities in Newark and Camden was announced in November at a press conference involving Senators Lautenberg and Torricelli and Representatives Frelinghuysen and Pallone.

A ceremonial signing of the first RUNet 2000 Authorization to Proceed, with senior level executives from Bell Atlantic, was held at the April Board of Governors meeting.

Nearly 40 Computing Services staff members and about 50 student staff participated in the New Brunswick Campus Open House in April. Information about services was disseminated through brochures and conversations with prospective students and their families.

An internal Rutgers event celebrating the arrival of two Sun Enterprise 10000 computers was held in May. In attendance were many faculty, staff, and students, who heard remarks from senior executives representing Rutgers and Sun Microsystems.

New brochures describing services available from University Computing Services were created and distributed to students, faculty, and staff on all campuses. Posters, bookmarks, and folders bearing the RUNet 2000 logo were also created and distributed.

The *Rutgers University Computing Services Camden News*, produced twice during the year, was distributed to faculty, staff, and students. In addition, announcements covering new services, improvements to services, upcoming changes, and other is-

sues were sent through the weekly campus-based REACT e-mail service. In Newark, Computing Services worked with several departments to provide tours, demonstrations, temporary accounts and access to computer workstations for community outreach programs. In New Brunswick, a communication mechanism was developed to inform departmental computer staff about current services, plans, and requirements for new services.

Articles about Rutgers University Computing Services and RUNet 2000 activities appeared in the *Home News Tribune*, *Star Ledger*, *Courier Post*, *Courier-News*, *Trenton Times*, *Daily Targum*, *Rutgers Observer*, *Rutgers Magazine*, *Rutgers Focus*, and the Faculty Alliance for Rutgers Report. WCTC radio and WMBC television also broadcast news about RUNet 2000 activities. A special Rutgers Focus insert was prepared to inform faculty and staff about the implementation process and first year's schedule.

Information about RUNet 2000 continued to be disseminated through the project website <http://runet2000.rutgers.edu> which was reorganized and improved during the year. Questions posed by students, faculty, staff, and others were answered throughout the year via this mechanism.

## II. MAJOR HIGHLIGHTS AND ACCOMPLISHMENTS

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### A. University Directorates

#### 1. UNIVERSITY ADMINISTRATIVE COMPUTING SERVICES

##### *a. Year 2000 (Y2K) Compliance (Goal for 1998/1999)*

Progress continues to be made in our Y2K compliance efforts. During the past year several milestones were successfully reached including:

- Phase I of the Student Registration DataBase (SRDB) conversion was implemented over the Thanksgiving weekend. The major applications converted at this time were Student Registration, Course Scheduling and Student Records and all of the interfacing application including Financial Aid and Student Financial Systems.
- Phase II of the SRDB conversion was successfully implemented the first weekend in April. This phase was related to the expansion of the flat files generated from the SRDB including the Student Registration, Course Registration, Registration Master, Active file, Course Tape, Registration Transactions and Course Scheduling. The flat files support all types of report generation in the Student Systems.
- The conversion of the Room Scheduling System from DB2 to ORACLE.
- The conversion of the Financial Accounting System.
- Upgrade of the TouchTone Telephone Registration System with Y2K compliant hardware and software.

All mainframe applications have now been enhanced and tested for Y2K compliance. In addition, conversion and testing for Undergraduate Admissions, Payroll and Freshmen Sectioning on-line screens to eliminate IBM's Application Development Facility (ADF) is in progress and on schedule to be completed by November.

From the Y2K infrastructure perspective, a complete analysis of administrative computing equipment, software, and networks was prepared early in the year and an additional 1 million dollars in funding secured. The mainframe Y2K infrastructure was subsequently implemented in the spring along with Y2K compliant versions of the mainframe operating system, system software packages, and the Information Management System (IMS) database system that runs a large portion of the financial and student systems. A total of 29 major system software products were replaced. New disk drives were installed on the mainframe to create a Y2K test partition for forward date testing.

Testing (simulating University administrative applications in the 21<sup>st</sup> century) is in progress. Development of test strategy, test plans and test partition was created in early May. Initial forward date test cycles were completed successfully.

The Infrastructure for ACS PC's and servers was also addressed during the year and 76 workstations/servers were replaced or upgraded.

*b. ARTSYS (Goal for 1998/1999)*

In partnership with the Office of Enrollment Management, the ARTSYS project was initiated to provide course articulation between NJ community colleges and Rutgers and to provide a mechanism for transmission of electronic transcripts from the community colleges to Rutgers.

In the fall of 1998 Rutgers purchased ARTSYS software and began the process of incorporating the New Jersey Community Colleges into this project. By the end of 1998 all nineteen community colleges had signed an agreement with Rutgers to participate in ARTSYS. Through the first half of 1999, the community colleges and Rutgers colleges have been providing course articulation data that will be centrally maintained via the ARTSYS system. Implementation of the Transfer Articulation phase will be complete September 1999. The E-transcript phase of the project was kicked-off in June with a target completion by March 2000.

*c. Hope and Lifetime Learning Tax Credit (Goal for 1998/1999)*

Significant enhancements were made to Student Accounts Receivable system in order to comply with the Taxpayer Relief Act of 1997 and to facilitate tax benefits for parents and students including the Hope Scholarship and Lifetime Learning tax credits. Partnering with the Student Financial Services (SFS) office, ACS designed and developed the Tuition Payment Statement (1098-T form), the Student Statement of Accounts form and ws-9 forms. Approximately 60,000 1098s were generated and mailed out, an interface file to the IRS was transmitted and an on-line process was developed to allow the SFS user to view 1098 information mailed to the student.

*d. Financial Aid Reauthorization (Goal for 1998/1999)*

The US Department of Higher Education reauthorization occurs in 1999. This reauthorization takes place every 5 years and has a major impact on the University's financial aid processing. Reauthorization years result in significant system modifications that are required to support the changes. To insure a smooth implementation, project plans were outlined and major milestones, due dates and implementation dates planned for the remainder of 1999. During the first half of the year, the FAMS application was significantly enhanced to provide a new promissory note for direct loans, extensive changes to the Pell Grant process, a redesign of the Free Application for Federal Student Aid (FAFSA) and conversion of the transmission mechanism for student financial aid data from Title IV WAN to the Internet.

*e. Web Initiatives (Goal for 1998/1999)*

The Multi-year Plan for Administrative Computing called for expanded use of web technology to leveraging existing business logic and systems. To this end, numerous new Web applications were released during the year aimed at improving services for current and prospective students, faculty, staff, and administrators. Some of the new Web applications and their benefits to the University follow:

*On-line Schedule of Classes*

This dynamic web site enables students to view the current semester's schedule of classes on-line. Students can now search for classes by campus, level of study, location, time and course level. The schedule of classes information includes – the availability of the class, the days and times and locations offered, prerequisites, and maps of the building locations. The On-line Schedule of Classes provides students with much easier access and more complete data on Rutgers classes than the paper format.

*Student Program Slips*

This component of the Transcript and Grade web application enables students to view their current course schedule of classes complete with time, location, and on-line maps.

*Graduate Admissions on the Web*

The Graduate Admissions web site and application enables applicants to apply for graduate study at Rutgers on the Web. Functions include:

- Web application for graduate study at Rutgers
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- System benefits include the ability to apply on-line, a more integrated presentation of graduate programs, and a minimizing of data entry. The system also significantly improves the processing of graduate information requests and captures the data electronically for further follow-up.

*On-line Transaction Adjustments*

The Oracle/Web Transaction Adjustment Table application was implemented the end of December. The benefits of this Web application are to allow customers in the Student Financial Services to easily view, add, and update transaction codes, descriptions, account and object codes, and summary codes used in the adjustment process. Before the development of this new application, ACS pro-

grammers, data control operators, and database administrators were all needed for the updates.

*Web Grade Reporting Enhancements*

In response to an email suggestion from a student, the Web display for on-line grades was enhanced to include an indicator designating whether or not the grade was temporary.

*f. ACS Office Renovations (Goal for 1998/1999)*

Administrative Computing offices (over 6,800 square feet) were completely remodeled and renovated this year. Upgrades included painting, carpeting, blinds, furniture, electrical and networking. With the assistance of numerous offices throughout the University, ACS staff were temporarily relocated for a two-month period while the majority of the work took place. The project was successfully completed the end of June with outstanding results.

*g. Staffing*

1998/1999 can be characterized as year of change and transition. In the last two years, 25% of the staff have joined the organization. This has provided an opportunity to see the operation through new eyes, which has been stimulating for the organization. Key senior management positions have also been filled this year and the division is adjusting to changes in style, operating practices, and expectations.

Recruitment has been a major focus for the Division throughout the year as staff have retired or resigned. The IT job market continues to severely impact recruitment efforts. Job fairs and word of mouth have proven to be our best sources for candidates and we are very pleased to have recruited 19 new staff over the year.

## 2. UNIVERSITY TELECOMMUNICATIONS

### *a. Strategic Accomplishments*

While maintaining the legacy RUNet is of critical importance to the University, Telecommunications Division (TD) has undergone significant change in preparation for the implementation of the university's telecommunications infrastructure project, RUNet 2000. After years of planning for RUNet 2000, this year brought the project's official implementation commencement with the initial "Authorization to Proceed" on April 9, 1999. Significant strategic events that facilitated the transition from project planning to implementation are listed below:

9/30/98 - Finalization of contract with Bell Atlantic Network Integration to provide wiring to 260 university buildings as well as backbone infrastructure construction

11/17/98 - Establishment of new leadership within Telecommunications Division to lead the Rutgers implementation team

1/22/99 - FOCUS Insert published educating faculty on RUNet 2000 schedule and implementation

3/99 - First biweekly interdivisional legacy transition issues meeting conducted to develop and implement a transition plan for the migration of the legacy RUNet services to RUNet 2000.

4/9/99 - President Lawrence presents "Authorization to Proceed" to Jim Cullen of Bell Atlantic which officially authorizes Bell Atlantic's wiring crews to begin work in the Kilmer Library, Library of Science and Medicine, as well as in the Barr, Allen, Mattia, and Metzger (BAMMS) dormitories.

4/26/99 - Analysis and structure of project budget approved by University Senior Vice President and Treasurer

5/16/99 - Bell Atlantic wiring crews begin work in BAMMS dorms

6/99 - Made recommendations to Research Advisory Board concerning technical considerations for I2 deployment

In addition to the above events, the RUNet 2000 implementation team adopted a collaborative approach to establishing project standards and formalizing the project schedule. Coordination with affected departments ensured minimal construction delays in the critical opening phases of the project.

*b. Operational Accomplishments*

In order to efficiently manage the legacy RUNet and begin implementation of RUNet 2000, the Telecommunications Division began a work flow analysis of the RUNet 2000 designed to define discrete project responsibilities. This was completed in June 1999 for the project and will continue for all TD operations in 99-00. This effort will greatly assist in maintaining operational control of the RUNet 2000 project schedule as:

- the members of the team had total input to the work processes
- there are discrete “handoffs” and “deliverables” that are documented in the project schedule

All TD management employees have been trained in the university’s “pay for performance” system.

Performance agreements for TD Associate Directors as well as facilities management’s associate project directors were formalized in June 99 (for the 99-00 fiscal year). These performance agreements all have a component which links performance to timely completion of work related to the RUNet 2000 project schedule.

*c. Network Engineering Projects*

In addition to RUNet 2000 projects and normal maintenance, troubleshooting and emergency repair, some 42 Network Engineering telecommunications installations and fiber connectivity projects of various size were completed in 1998/99 (see list below) totaling close to \$3 million dollars from various sources of funding.

Summer Dorms Project:

- 1 Newell Apts.
- 2 Katzenbach
- 3 Lippencott
- 4 Hardenbergh
- 5 Campbell
- 6 191 College Ave.
- 7 35 College Ave.
- 8 60 College Ave.
- 9 39 Union, CAC
- 10 4 Huntington - SCILS
- 11 73 Easton Ave.
- 12 Ackerson, Nursing
- 13 Aidekman, 3rd Floor
- 14 Air Force ROTC
- 15 Alexander, Hurtado Video
- 16 Art Library/Murray fiber relocation

- 17 ASB, Administrative Sys.
- 18 Blake Hall (Anthropology)
- 19 Blake Hall (Landscape Arch.)
- 20 Camden-321/411 Cooper
- 21 CoRE to Psychology Fiber
- 22 Doolittle, Chemistry
- 23 Doolittle, Life Sciences
- 24 Eagleton Institute
- 25 Foundation Bldg. 4051
- 26 Health Ctr, Willets
- 27 Hill Ctr., Room 017
- 28 Jameson Residence - Fiber
- 29 Labor Education Center
- 30 Library of Science & Medicine - Fiber
- 31 Media Services,(7 Smart Classrooms)
- 32 Newark Fire Alarm
- 33 Old Queens Quad
- 34 osp -Chemistry Annex Modular
- 35 Parking, 26 Mine St.
- 36 RUNet 2000 Modular Bldg.
- 37 SCILS - 192 College Ave.
- 38 Student Ctr., 4th Fl., CAC
- 39 Transaction Press
- 40 UMDNJ - Busch Fiber
- 41 Van Nest

*d. Internet2*

An OC3 (155 Mbit) link to the vBNS was completed in October 1998. This connection provides immediate connectivity to Internet2 and is utilized by all traffic that transits between Rutgers and another vBNS connected institution. In addition to the generic connectivity which is available to the entire university, upgraded building links (100Mbit) have been completed to a number of buildings which were designated by the Research Advisory Board (RAB). These buildings include Engineering, Chemistry, Library of Science and Medicine, Kilmer Library, Alexander Library and others.

*e. Student Telephone Service (STS)*

The Student Telephone Service (STS) completed its second year in operation and has been well received by the Rutgers University student population. Approximately 50 presentations were made when the STS program first began. Last year 10 presentations were conducted while only a small handful of requests were made for this fall's orientation, indicating a general acceptance of the program.

## B. Campus Computing Services

### 1. CAMDEN COMPUTING SERVICES

#### *a. General University Support*

- Camden staff worked with the university wide committee to determine future direction of Novell support. Presently testing Novell versions 4 & 5 and preparing for installation on servers. Tested, debugged and began installation of Solaris 7 (the latest Sun operating system) on all Sun servers and clients. Tested, debugged and installed latest operating system on SGI systems under the Science Vision Project.
- Tested all University Computing Services administered systems, equipment and major software applications supported for Year 2000 compliance. Other than the final move from Novell 3.12 to either version 4 or 5, University Computing Services supported systems meet Y2K compliance. Kept informed through the campus Y2K coordinator to improve awareness and support for Y2K on campus.
- Worked closely with the Computer Science, Chemistry, Psychology, Campus Center, Science Vision Project, and Financial Services (swipe card system) department to assist them in developing their system and connectivity requirements at various times throughout the year.
- Leading the campus in the planning and implementation for RUNet 2000. Presently participating on the Business & Science building committee to assist in the identification of the equipment room, telecommunication room, and locations of outlets. As we move into next year the committee is expected to discuss and resolve most issues involved in the conversion of the building to RUNet 2000 standards. Planned and implemented successfully the following moves on campus which included voice and data between buildings: Financial Aid Offices, Political Science department, Summer Session Offices, Alumni Offices, Psychology lab, History offices, and campus T1 links. Provided campus guidance for the Distance Learning classroom modifications to move from ISDN-based services to a higher speed, more dependable ATM connectivity. A major effort went into the connection onto RUNet of two recently purchased buildings on Cooper Street – 321 & 411. Planning, installation and successful activation on RUNet included fiber connections to the buildings, router connection, interior wiring and other electronics. We continue to work closely with the LEAP Academy to both connect their new building under construction and to assist in planning for the interior wiring structure.
- Continued promotion of the templates available for faculty to develop classroom web pages at the Rutgers University Computing Services web seminars. With the introduction of WebCT on the campus this project has become less attractive for faculty and its promotion has been relegated to a lower priority by the TEC.

- Concentrated the Educational Series effort this year on key application seminars such as web page creation, Netscape browsing, home access, and mail (both Netscape and Pine).

*b. Instructional Support*

- Produced the plan for a three-year cycle of equipment replacement for the public computing facilities on the campus that was approved by the campus administration to maintain quality equipment and applications for the students. These plans replace the somewhat haphazard upgrades that occurred in the early years of the student computing fee allocations on the campus. All public PC computing systems were converted to the Windows 95 environment over the summer months to provide the latest operating system for student access. Hampered by the outdated hardware in the labs, previous plans for this conversion could not be implemented. Additionally, a significant number of the applications were upgraded (tested, installed and made operational) to the latest versions running on Windows 95, such as Microsoft Office 97. The projector and connections in the Instructional Computing lab were replaced to provide a brighter, higher resolution image for the instructors in the room. Additionally, other devices may now be connected to the projector easily including a portable computer, a VCR or a camera.
- Through our web educational seminars and a special “lunch” meeting on web composition and development, we reached out to the faculty to promote web construction. However, without a significant increase in staff resources to provide direct support for instructional web page construction, it seems that the faculty put their own energies into promotion and other tenure related areas which in general does not include web page creation for instruction.

*c. Research Support*

- Provided announcements to faculty identifying the Internet 2 project at Rutgers and talked directly with faculty to apply for participation. Although the interest was not great at this time, we will plan on holding a presentation in the upcoming fall to generate ideas.
- Staff are presently working with the School of Business in their initial plans to extend and expand their program in the Atlantic City area and to the PSE&G branch in Salem. Working with the provost office to supply support service to the Eastern Monmouth county program with Brookdale. University Computing Services staff participated in the Rutgers Academic Challenge Tournament held this spring on the Camden campus. Worked with the provost office in the planning of the expansion of services to the Camden branch of Camden County College and some initial planing with Rowan University.

With the establishment of Windows 95 as the standard operating system in the public labs, our central Novell server supporting the faculty and staff office systems was upgraded to a faster system. New, common software (such as Office 97, telnet and Netscape 4.5) was installed and made available to those faculty workstations capable of running these applications.

*d. Outreach Support*

- Worked with the provost and deans office in the preparation of the distance learning classrooms on campus and provided networking support as needed.

*e. Administrative Support*

- Staff assisted various departments in their decisions to purchase new systems and in their moves to new locations as previously indicated.

*f. Operational Accomplishments*

- Front line service was improved this year. Funding for a full time staff line was allocated from the student computing fee budget. Students receive high quality responses to their questions whether in the lab, over the telephone or even through e-mail. This has proven to be a very positive step in customer service to the students as indicated by our follow-up questions to those who asked for assistance. The evening support of the public labs in the Business & Science building improved this year with the hiring of regular part time employees to supervise the night and weekend operations. There has been a marked improvement in the consistency and quality of service during these hours. Although we have not started a new training program for the student aides, staff have visited a variety of other institutions and attended seminars to learn more about what seems to work to improve student training and service in the long run. Plans are under way for a more formal process to begin in the fall.
- Communications to faculty, students and staff increased this year. The University Computing Services Camden News, which was produced at the start of the fall and spring semesters, was mailed to all faculty and staff in Camden. Copies were provided in the public labs for students. In addition, timely announcements covering new services, improvements to services, upcoming changes, and other issues were sent out through the weekly e-mail distribution on campus called REACT. University Computing Services, Camden also maintained an Announcement Section in our web pages that gave more details about the activities in computing that affect the campus community. Access to our web pages continues to grow as more of the campus members discover the advantages of online documentation and instruction.
- A new web server was purchased, installed, tested and put into production for the Camden campus in the fall. There was a major effort involved to maximize the

automated conversion of web pages from the existing system to the new system and to minimize the disruptions to faculty and staff. Overall this conversion was highly successful. We continue to encourage other departments on the campus to follow the guidelines established for Rutgers web pages.

- At the beginning of this fiscal year a new committee, the Academic Technology committee, was formed on the campus to encourage and support campus planning across all disciplines for academic direction. Although the committee did not establish a long-term strategic plan, issues that the academic community members brought to the meetings were discussed in the context of information technology growth on the campus. Although this proved to be a good starting point for alignment and cooperation on the campus, more work and communication is needed to move forward.
- Ongoing discussions occurred with the various units on the campus (provost, FAS, Business, Law, library, etc.) to assist in determining the major staff resources required to meet the growing demand for Information Technology support. Based upon these meetings, the report of the Camden Strategic Academic Alliance Computer Planning committee, and discussions with other key campus individuals a campus staff resource plan was proposed as part of our “budget priority” request. This year one staff line was allocated to support the SGI systems on the campus that was a top priority for the campus. This SGI system administrator has spent the past six months upgrading all systems to the latest operating system releases with all of the appropriate security patches.

#### SUMMARY OF MAJOR SERVICES

##### *g. Email and Web Services*

University Computing Services, Camden continued to support the basic infrastructure for electronic mail, web and directory services for the campus. Camden servers processed roughly 134,000 email messages per week for the campus. A Camden committee of administrators representing each of the colleges on the campus as well as administrative units that regularly contact faculty, students and staff with official Rutgers business mail met to discuss the range of electronic lists required to effectively communicate electronically with their community. As a result thirty (30) e-mail lists for the Camden campus were requested and established including administrative staff, faculty, and student lists for Arts & Sciences, University College, Law School and Business School. Campus offices are now able to contact their respective constituents through these lists along with the REACT lists maintained on the two main campus servers (one for faculty/staff and one for students).

##### *b. Academic Instructional Computing Support*

Instructors wanting to provide hands-on computer training to students can reserve instructional microcomputer labs. In Camden, the labs were used 10 times during

the summer terms for a total of 295 hours, 34 times during the fall term for a total of 363 hours, 2 times during the Winterim term for 130 hours, and 34 times during the spring term for a total of 635 hours.

*i. Services for Faculty and Staff*

In Camden, SROA and local student computing fee funds were again allocated to continue the expansion of the Science Vision Project. Additional SGI workstations and software applications were purchased and installed to support the project (Chemistry, Computer Science, Mathematics and now Art). Based upon discussions with the campus representatives, a staff line was allocated to provide solid system administration support for this project. A new high-end batch/compute server (also known as a High Performance Computer) was purchased through the combined efforts of the Computer Science department and the Science Vision Project. This system consisting of six CPUs and 1 Gigabyte of RAM was installed and will be administered by Computing Services. Faculty and students will run the Sun HPC software to submit batch jobs and perform parallel processing. Specialized libraries, such as support for MPI, are included with the software.

In Camden, there were 4,962 student accounts and 740 faculty/staff accounts and 90 guest/departmental accounts.

*j. Help Services and Resources*

On the Camden campus, staff handled 3,837 walk-in questions and 358 telephone questions from students, faculty, and staff. Special assistance was provided for physically challenged students in Camden, in conjunction with the Committee for Students with Disabilities. The PC application Naturally Speaking was installed on a system that was moved to an enclosed room in the Robeson library to provide voice input and speech output for student access. Public computing labs provided a broad range of services to students during the Fiscal Year. In Camden, public computing labs were open for about 40,200 hours. During this time there were 168,555 PC log-ins from the public labs to the server.

Camden Computing Services supported departmental projects in: Financial Services, Forum for Public Policy, Physics, Biology, Office of Student Affairs, Development Office, Office of Summer Programs, Financial Aid, Psychology, Political Science, Fine Arts, Project LEAP, Computer Science, Admissions, and the Provost's Office.

Short hands-on workshops or lecture/demonstration type seminars on various supported software and systems are presented every semester.

We are committed to maintaining and increasing the number and content of the documentation describing the services and applications offered to the community in Camden. The Camden Computing Services website is updated regularly while the entire set of documentation is stored online. Of particular value to our customers are the online weekly announcements, the HELP section, and the New User section.

Fall and Spring News flyers were produced and distributed widely across the Camden campus to inform the community about changes, new services, service improvements and other computing activities of interest. All articles include web addresses for further information.

#### INFRASTRUCTURE

##### *k. Campus Computing Facilities*

University Computing Services directors from all three campuses continued the practice from last year and joined together in Fiscal Year 98/99 to coordinate one large purchase order for new computers in instructional labs. For Camden, this resulted in both a saving and an improved system over what would have been purchased as an individual purchase. 58 of the 220 computers ordered through the Rutgers Computer Store resulted in a saving of \$150 per computer.

During the summer, all Camden campus public computing laboratories were converted to Windows 95 based systems. With the large purchase of computers last year to bring all the public systems up to a minimum Pentium 120 level, it became possible to install this operating system and the accompanying latest in application software such as MS Office 97. Additionally, the Instructional Computing lab was improved with the addition of a new, brighter ceiling mounted projector that also provides the capability to connect not only the instructor system, but a portable or even VCR for projection.

Activities related to RUNet 2000, a comprehensive and advanced data, video, and voice communications network improvement project, moved forward during Fiscal Year 98/99 on all campuses. In Camden, meetings have been held to start the planning process for the rewiring of the Business and Science building as well as a review and plan to improve the campus backbone infrastructure to handle increased speeds.

As part of the Internet2 initiative a new high bandwidth OC3 link (155 Mbps) was installed between New Brunswick and Camden to replace the slower T1 link (1.5 Mbps). The campus noticed a significant improvement in the flow of data, especially when accessing off-campus systems.

## 2. NEW BRUNSWICK COMPUTING SERVICES

### *a. Usage of General Access Systems*

Most students use our systems. There are about 30,000 normal student accounts on Eden, with a student body of 33,400 in New Brunswick. About half the 16,000 eligible faculty and staff have accounts on the New Brunswick central system, RCI. One way to judge usage is to note that about half the faculty/staff have email addresses registered in the HR database. Of these, about 56% use Computing Services central facilities (including RCI, Eden, and the equivalents at Newark and Camden). 36% use departmental facilities at Rutgers, and 8% use non-Rutgers facilities.

### *b. Status of Change to "New Style" Central Services*

New Brunswick Computing Services (NBCS) is about 5 years into a major change in the nature of our central services. The full set of changes will probably take about 5 more years. The "old" design was based on general-purpose timesharing systems. In the "new" design most users will not login to our systems. Services will be provided remotely to the desktop from central servers. A good example is email. In the old model, users logged into our system and ran an email program. Now they use a program on their desktop, such as Netscape Communicator. It contacts a central server, which stores their email. It appears to the user that everything is happening on their desktop. However in fact most of the work is happening on the central server.

### *c. Email*

During the last year, we took two major steps in moving email to the new style: (1) Support for IMAP is now complete. IMAP is the technology that Netscape and other desktop software uses to read mail from a central server. All users are now being encouraged to read email via Netscape or other desktop tools. (2) We set up dedicated mail servers for both faculty/staff and student clusters. These servers have enough redundancy that we can do upgrades and other changes without affecting service to the users. This allows us to provide high uptime for email.

### *d. News*

News was the first service to completely break its link to the timesharing systems. It is now provided by a single, University-wide server. Even those working directly on our UNIX systems access it remotely. That changeover occurred during this year.

### *e. White Pages/Account Creation*

We have begun a reengineering of white pages and the process of creating accounts. These two areas are tied together because account creation is based on the white

pages. When a new faculty member or student wants to create an account, we must determine who they are, and verify that they are actually registered students, current faculty, etc. Most of the information to do this is in the white pages.

White pages reengineering is a joint project of Network Services (NBCS) and Administrative Computing Services. It will be brought out in phases, starting with September 1999. Network Services will do the account creation and maintenance software. The first phase of this is expected near the end of 1999. While the completion dates are in the next academic year, design and preliminary implementation has been a major task for Network Services this year.

*f. Support for the Web*

RCI is used by 3191 individuals and departments to support their web pages. There were several major improvements in this service during the last year: (1) Support for virtual hostnames, (2) support for .org sites, and (3) support for web pages generated by programs. Virtual host names enable departments to create a web site with a name such as departmentname.rutgers.edu. Such sites are located on RCI, although the name makes them appear to be departmental facilities. A number of departments are involved with professional organizations, and want to host web pages for those organizations. Generally those organizations have names ending in .org, e.g. www.aisraelstudies.org (a project associated with the Rutgers sociology department). We are now prepared to set up the infrastructure to create such sites on RCI or other Rutgers machines.

*g. Official Email Projects*

A number of groups throughout the University are interested in using email to replace various paper-based ways of communicating. During the last year we have developed projects aimed at both faculty/staff and students. Both of these projects involve email lists that are built and maintained automatically. They are based on the payroll database and the Student Records Database, respectively.

*h. Leveling Off Usage in Student Labs*

For the first year, there have been signs of a leveling off of general lab usage. From 97/98 to 98/99 the following changes in usage of the labs were recorded:

<i>Total</i>	<i>Busch</i>	<i>College Ave.</i>	<i>Cook/Douglas</i>	<i>Livingston</i>
-6%	-10%	+0.4%	-15%	No change

We are not surprised to see usage leveling off. Students are increasingly able to work from home or their dorm rooms. However we think the decrease in Busch may be one-time. During this year our facilities were moved to the Allison Road Class-

room building (ARC). In the past, many students dropped by the labs before and after classes. The location of ARC makes that less convenient.

*i. Dorm Software Project*

As more dorms are wired, we want to enable students to work in their dorm rooms rather than the labs. One aspect of this is the dorm software project. This project provides 15 key software products from the labs available to students with equipment in their dorm rooms. During this year, the dorm software project became available in all wired New Brunswick dorms.

*j. Laptop Access*

This year we opened the first facility in the Busch Student Center that enables students with laptop computers to connect to the Rutgers network. Currently this is in a pilot stage. During the next year, at least two additional locations are anticipated. This project required a significant development effort. In order to deal with security concerns, network user identification is mandatory. Thus a system that requires a login before the laptop user is permitted to access the main Rutgers network was developed. This technology is expected to be used extensively throughout Rutgers.

*k. Support for Large Statistical Users*

Many researchers find that they can do their research computing on their desktop system or systems in their department. Thus support for research computing is now focused on special areas that require very large-scale systems, and on developing and supporting technology that will be used in departments. In the first category, this year a new system was provided for large-scale statistical work. This work requires (1) very large amounts of disk space, (2) specialized tape drives, and (3) special security precautions. These needs are best met by a central facility. The new Large Dataset Statistical facility is based on a Sun server with 1 Terabyte of disk (1 terabyte = 1000 gigabytes = 1,000,000 megabytes), a collection of tape drives configured to read tapes from a variety of data sources, and special security controls. The security is needed because of the sensitivity of the data being analyzed.

*l. Support for Large Scale Numerical Computing:  
The High Performance Computing Project*

NBCS provides staff and funding for an interdepartmental High Performance Computing Project. This project is intended to help researchers in the sciences and engineering, who have large numerical computing projects. Until recently, the primary resource for these users has been large-scale computers at national labs and other supercomputer center. The local staff helps users identify locations to run. They

then help the researchers prepare their code to take advantage of parallel or vector systems. This activity is continuing at roughly a constant level.

However beginning this year, two local resources for high performance computing have been acquired:

- 2 Sun Enterprise 10000 computers, with 64 processors each
- The Rutgers Computational Grid.

The Enterprise 10000's arrived just at the end of this year. One of our priorities in the coming year will be helping researchers use it properly.

The Rutgers Computational Grid is a network of 40 PC's running Linux. They are distributed throughout New Brunswick and Newark. This system is still in the development stage, although it has been used for some actual research. Early results suggest that it will be a very attractive way to do handle many numerical computing tasks. We expect the number of computers in the Grid to expand considerably during the coming year, as it goes into production use.

#### *m. New Training Lab Permits Hands-On Courses*

During the spring of 1999, a new training lab was opened in Hill Center. This has enabled NBCS to move all of its training to a hands-on format. Previously most of the training used a lecture/demonstration format. Users are reacting well. Where in the past attendance at the education series had been limited, now classes in some common areas (largely email) are filled several times a week. Staff are also doing training on site where there is enough demand to justify it. Starting in April 1999, 35 classes were given with a total attendance of 319. The classes cover primarily email and introductory instruction in UNIX. The training facility will be refurbished during the summer and fall of 1999.

#### *n. Livingston Pilot Becomes Ongoing Departmental Support*

During the last several years, many of the new services have been focused on supporting the staff in departments. The New Brunswick Computing Advisory Committee is helping us plan strategy in this area. This emphasis on departmental support represents a change in approach. It recognizes that departments are now in a better position to provide many kinds of computer support than Rutgers University Computing Services is. There are more computer support staff in the New Brunswick departments than in NBCS. One focus for this change has been the "Livingston Pilot". The Pilot was originally intended to test the new approach by putting a self-contained staff on that campus. This staff was intended to implement the departmental support model on the Livingston campus. During the spring of 1999 an evaluation of the Livingston Pilot was conducted, with the assistance of two consultants from the University of Indiana. In general the conclusion was that the Pilot had met its goals. However there was concern about the level of staffing.

This marks the end of the Livingston Pilot. At this point the services envisioned for the Pilot have largely been integrated into the overall offerings of NBCS. This includes training for departmental staff, second-level support aimed specifically at them, web-based resources, regular meetings, and a mailing list. One important outcome of this new orientation has been creation of an active community of departmental staff, who interact regularly with each other and with University Computing Services' staff.

*o. Departmental Support for UNIX*

Most of our departmental support effort has been directed at PC's and servers that support PC's. There is also substantial interest in help for departments that use UNIX. This spring, the Open Systems Support group for UNIX and related technologies was initiated. Currently there is only one staff member. He is concentrating on developing a support strategy, as well resolving some urgent security issues. As this group expands, we expect to provide services similar to those provided by MSSG are expected, but for departments that use UNIX.

*p. RUNet 2000*

MSSG and UNIX staff are working with Telecommunications to develop specific technical plans in a number of areas, as well as a general model for helping departments transition to the new infrastructure.

*q. Year 2000*

NBCS (together with ACS) has provided much of the central support for the University Year 2000 effort. This includes online resources, training, and support for departments. This summer, NBCS staff is working with departments to upgrade 87 Novell servers to new versions of Novell or to Windows NT. This has involved a major training program, as well as consulting – some of it on-site.

*r. Communication with Departmental Staff*

Over the course of the last two years, NBCS management has created a set of communications vehicles intended to cover most of the major areas in which coordination is needed with other divisions and with our user community. In working with the user community, our focus has been on communications with departmental staff. In the current service model, departmental staff are intended to represent the needs of users in their departments. For each of the major technical areas (UNIX and PC/LAN) we have regular monthly meetings. These meetings include technical presentations and discussion. In them we discuss our current services, plans, and requirements for new services. The results of these meetings are important in helping us set priorities and adjust policies. Associated with each of the meetings is a mailing

list and web area. The lists are used by departmental staff to ask questions, and by Rutgers University Computing Services' staff to announce changes. They have proven surprisingly successful in creating a community. Many of the questions asked by departmental staff are now answered by other departmental staff. Increasingly these lists are being used to deal with ongoing security problems.

*s. Communications within Computing Services*

To help communications within Computing Services, NBCS managers chair a set of working groups covering the major areas in which the campus divisions are involved. (The RUNet 2000 Interdivisional task force is an exception. It is chaired by Telecommunications.) Of these, the most regular are the RCI/ICI meetings. These meetings were originally intended to discuss changes in the RCI and Eden systems with support staff of those systems. However they have recently been changed to play a more strategic role in the support process. They are now intended to be the primary way in which Rutgers University Computing Services support staff keep in touch with the groups providing services. Service providers are expected to make regular presentations on their services, emphasizing changes and new services. This includes systems staff within the campus divisions, and also staff from Telecommunications and Administrative Computing Services. Associated with these meetings is a mailing list, going to all support staff. This list is used to announce changes and ongoing service problem.

### 3. NEWARK COMPUTING SERVICES

#### *a. Student Lab Improvements*

The Newark Campus Computer Planning Committee (NCCPC) made significant additional funds available from the student fee for support of the student labs. Direct user support was expanded with Site Managers, an ICI lab technical manager, and extended staffing and hours of operation. Computer projectors and electronic screens were installed in four classrooms with in-process plans for the installation of 6 additional projectors.

#### *b. Site Manager Program Expanded*

The Site Manager program was successfully piloted at the Dana Library lab and was extended to the Law and Hill Hall labs. Site Managers with computer and supervisory skills were hired to oversee the day to day operations of the labs and work in conjunction with Computing Services to develop policies and procedures for more effective and consistent operation of all student computing labs on the campus.

#### *c. Authentication Assures Student Priority*

Authentication was implemented in all student labs on the PC workstations. This assures that students have first priority for the use of student funded equipment. Procedures were developed simultaneously with this implementation to accommodate situations in both Dana Library and the Law Library where non-account holders need to access the systems.

#### *d. Computing Instructional Facility (CIF) Lab Servers Upgraded*

Three CIF lab servers were upgraded with additional memory and disk and other system design changes that improved the reliability of the processors during peak period of use. All nine CIF servers were upgraded with mirrored disks in preparation for a future move to duplexing.

#### *e. Computing Services Assists New Students with Registration*

Computing Services participated in the planning and support of several days of admitted student conferences, orientation, advising and registration of new students. During these sessions, staff assisted all new students in creating their email accounts that will provide a communication channel between the students and the campus administration.

*f. Campus Web Server Provides Campus Support*

The campus web server was installed and fully implemented as the resource for storing departmental web information. Procedures for communicating with departments, creating department accounts and support of the web server were established and implemented.

*g. Distributed Computing Committee to Develop Model*

An initial meeting to evaluate distributed computing support for the campus resulted in generating consensus to assemble a committee that will further develop this concept. The next steps of the committee will be to review the needs of the campus and develop a model of support appropriate for the campus.

*h. Campus Administrators Assist NCCPC*

Campus administrators met on several occasions to discuss administrative computing needs and improved coordination and integration of shared data. This ad hoc group has been incorporated as a subcommittee of the NCCPC and will continue to analyze and recommend on campus administrative computing support.

*i. Education Series Enhanced*

The Education Series was revitalized through enhanced planning and preparation for this highly requested campus support activity. The range of workshops provided was expanded, instructors were better prepared, and announcements were more widely distributed resulting in very good evaluations of the activity. Several of the workshops had registrations that exceeded the capacity of the training lab resulting in the scheduling of additional sessions.

*j. Computing Services Assists in Outreach*

The division worked with several departments to provide tours, demonstrations, temporary accounts and access to computer workstations for community outreach programs. Several of the groups that visited this year will be returning on a regular basis.

*k. Y2K Compliance*

All hardware associated with the student labs and the division have been upgraded or verified as being Y2K compliant. Most of the lab applications are verified as compliant. Full analysis of the applications is underway and will shortly also be completed. The staff works closely with the campus Y2K committee to assure that departments will also be able to complete the necessary Y2K actions.

*1. Division Realigned for Better Support*

The division was realigned to better support the functional activities and services supported. Five employees were hired to fill open positions bringing specific skills to assist in the support and management of our services. Progress has been made in defining the framework in which functions should be carried out and the scope of activities for each employee.

### III. FY 2000 GOALS

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#### A. RUTGERS UNIVERSITY COMPUTING SERVICES STRATEGIC GOALS

##### 1. *Computing and Information Technology*

- Provide University-wide leadership in the integration of information technology resources to support the University's mission of Instruction, Research and Service.
- Facilitate the effective and efficient functioning of policy advisory committees for computing and information technology that will serve as catalysts for implementing policy and standards.
- Identify opportunities to encourage collaboration and cooperation in adapting information technology resources to support instruction, research and service among and within the disparate disciplines offered at the University.
- Facilitate and encourage research capabilities, opportunities and support through involvement and participation in Internet2 and development of RUNet 2000 project enhancements of the Rutgers network.
- Provide advice, counsel and direction in the establishment and development of enterprise administrative applications, which will increase efficiency and productivity.

##### 2. *Community Service and Support*

- Extend Rutgers' resources to K-12 school districts throughout the state through proactive application of information technology.
- Encourage the development of applications across all disciplines that will maximize the use of the high capacity network bandwidth made available through the RUNet 2000 project.

##### 3. *Customer Service and Support*

- Become a role model within the higher education community for faculty, staff and student satisfaction and service excellence.
- Recruit and retain highly qualified information technology professionals.

##### 4. *Connectivity*

- Design, build and support a world-class network infrastructure that will support the expanding administrative, instructional, research and service needs of the University.

## 5. *Communication*

- Develop and execute communications plans, which inform the Rutgers faculty, staff and students of University Computing Services' mission, functioning and activities.
  - Work closely with the Department of University Relations to inform the Rutgers community and local media about Computing Services' activities.
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## B. University Directorates

### 1. UNIVERSITY ADMINISTRATIVE COMPUTING SERVICES

#### PUBLICLY VISIBLE GOALS:

#### *a. Student Web Registration*

Build a web registration system that complements touch-tone registration and permits students to add/drop courses in real-time via the Internet.

#### *b. Student Data Mall*

Build a virtual "student data mall" on the web encapsulating all the types of information and services students need, in a single, easily navigable web site. Examples include on-line registration, schedule of classes, transcript requests, statements of accounts, address update, financial aid documents and grades; all in a single integrated site.

#### *c. White Pages Re-engineering (People Database)*

Re-engineer Whitepages on-line directory services and develop a process for managing Rutgers constituents and their various relationships to the University. The People Database is the underpinning structure for this project. The initial Release will integrate students, faculty, and staff into a new People database. It will also completely replace the current on-line directory and allow students to selectively suppress their own data on-line.

#### *d. Class Rosters*

Deploy class rosters to faculty via the web. The web site that builds class rosters is complete. The remaining piece is to build in a security and distribution method to limit access to rosters on a need to know basis.

*e. Financial Aid Reauthorization*

Complete the mandated changes in the Financial Aid Management system associated with the federal financial aid reauthorization that occurs every five years.

*f. ARTSYS*

ARTSYS, phase 1 (course articulation) will be completed in fall 1999. ARTSYS, phase 2 (e-transcript) will be implemented in spring 2000.

*g. Pay-For-Performance*

Provide the necessary system modifications to support pay-for performance including an on-line web processing and interface with legacy payroll system.

*h. Year 2000 (Y2K) Compliance*

Complete Y2K conversions, testing and infrastructure upgrades. Prepare action plan for contingency and “fallout” problems.

*i. Winter Term*

Provide support for Winter Term in the Student system. Initiate a formal planning process, work plan and cost assessment for the implementation.

*j. Graduate and Professional Education Database (GPED)*

If funding is forthcoming, initiate phase 1 of the GPED to provide a data repository of graduate program information with on-line web access.

INTERNAL INFRASTRUCTURE GOALS:

*k. Architecture*

Develop an architectural road map for administrative systems addressing technology, data, process, applications and transitional issues.

*l. Upgrade Mainframe Operating System to OS/390 v2.8*

IBM has enhanced the functionality of its mainframe operating system in v2.8 considerably. This upgrade will also keep ACS in line with current support levels, which is critical to the reliability of these systems to the University. Work is projected to begin on this upgrade in April 2000.

*m. Upgrade Oracle to version 8i*

This upgrade is required to improve reliability and availability of the University's centrally supported administrative data warehouses and Web pages. It also allows us to stay current with Oracle's latest functionality and security. The upgrade is targeted for late spring 2000.

*n. Evaluate Oracle's Developer Java Application Server*

This is a potential alternative to client/server for administrative business application. This tool will permit us to leverage the knowledge base we already have in Oracle's suite of application development tools – Developer 2000 – to Internet enable existing systems such as HR Info, and to build new Internet enabled business applications.

*o. Evaluate Oracle's WebDB*

This product offers us the ability to build Oracle based web sites more quickly and efficiently with a visual browser based tool. This tool could position ACS to offer web site hosting to departments looking to build web sites and add administrative data access to their web without having to maintain web servers and databases themselves.

*p. New Production Oracle Web Server*

Once ACS has completed Y2K testing for the Oracle Web Server applications, the new production Oracle Web Server running on Sun Solaris servers will be moved into production. This server will improve availability and reliability as we begin to add more critical University applications to this platform. The implementation of this new server is targeted for November 1999.

*q. ACS Network Enhancements*

Upgrade subnets supporting ACS Production servers to 100 Mb speed to enable our customers a greater degree of productivity and faster access. Target first half of FY 99/00.

*r. Internal Audit Recommendations*

Complete outstanding audit recommendations.

*s. Data Entry*

Continue the process of reducing centralized data entry through the implementation of electronic feeds and re-engineering on-line applications.

ORGANIZATIONAL GOALS:

*t. Professional Development*

Implement a process for formal professional development planning for the ACS staff in concert with business needs.

*u. Customer Satisfaction*

Develop a process for surveying customer satisfaction.

*v. Project Management Function*

Create a formal program or project management function that will facilitate overall project management. Implement structured methods and procedures for project management, release planning, business partnerships with clients and system development. This is a new role, which in part will be based on the availability of funding.

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## 2. UNIVERSITY TELECOMMUNICATIONS

*a. Plan and Implement RUNet 2000*

- Developing and publishing technical networking standards to facilitate a smooth migration from the legacy network to the RUNet 2000 network
- Completing outside plant construction on Busch and Livingston campuses
- Providing connections to I2 recipients as chosen by the Research Advisory Board
- Developing budget/work progress report structure to keep administration informed with formal monthly reports
- Establishing a communications plan which ties directly to the project schedule and is easily understood by all members of the university community

*b. Non-RUNet 2000 Related Goals*

- Develop a TDSC which improves TD responsiveness to university requests
- Ensure no Y2K network problems
- Develop a disciplined project management approach to all processes in TD

- Leverage RU's size in obtaining economies of scale in all telecommunications areas (data equipment, voice equipment, computers)
- Continue to support non-RUNet 2000 wiring projects. Some current projects being worked on for 1999/2000 include:

41 Gordon Road  
 Alcohol Studies  
 Army ROTC  
 Blumenthal, 3rd Floor  
 CABM  
 Camden Outreach – LEAP Academy  
 Cancer Research  
 Center for Law and Justice, Newark  
 Clothier Hall  
 Foran Hall  
 ISP – Chemistry Annex Modular  
 Louis Brown Athletic Center (RAC)  
 Marine Science, Busch (Green Bldg.)  
 Neuroscience – Nelson Hall  
 Newark, K-12 Outreach  
 Psychology, Tillett, Livingston  
 Tuckerton Dorm 2  
 UMDNJ – New Brunswick  
 Waksman, Werner Braun  
 Writing Lab – Cook/Douglass  
 Zimmerli Museum

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## C. Campus Computing Services

### 1. CAMDEN COMPUTING SERVICES

#### A. STRATEGIC GOALS

##### *General University Support*

- Develop and implement plans for Novell, UNIX, NT and other operating system improvements.
- Coordinate and support Year 2000 activities across the campus aligned with central and local Y2K committees. Increase visibility and contact across the campus.
- Provide leadership to campus departments in developing their Information Technology (IT) needs and plans.

- Provide networking leadership for the campus to improve backbone services, assist in building design, communicate standards and assist in transitional networking plans. Prepare and assist building occupants for a smooth transition to RUNet 2000.
- Promote continued collaboration and cooperation with the Library and TEC staff in supporting computing components of the planned technology-based classrooms.
- Evaluate the Educational Series for improvements.

#### *Instructional Support*

- Provide IT leadership to the campus in the development and implementation of plans for public computing facilities on the campus.
- Encourage and assist faculty in developing web-based instructional materials for classroom presentations.

#### *Research Support*

- Encourage and support faculty participation in I2-related and other projects requiring information technology. Schedule I2, RUNet 2000 and Information Technology for the 21st Century presentations in Camden to encourage support for grant submissions.
- Participate in the integration and support for departmental outreach programs including distance learning and off campus instruction.

#### *Outreach Support*

- Gain knowledge of and assist in video distribution for distance learning programs.
- Collaborate with other departments planning for off campus programs.

#### *Administrative Support*

- Collaborate with administrative departments on campus to improve office workflow and assist in planning for their systems and software upgrades.

### **B. OPERATIONAL GOALS**

- Improve front line service by developing and begin implementation of a plan to improve student assistants training through seminars, coaching, evaluations and support.
- Maintain communications to faculty, students and staff through paper mailings once per semester, E-mail through the campus REACT, student newspaper and online web announcements.

- Establish a separate student mail server for improved e-mail service.
- Continue staff participation in CTE teams to work on improving Rutgers University Computing Services and to foster the established Values.
- Further align services with the campus and institutional needs through participation on the Camden Academic Technology committee and communications with administrative offices, academic departments, and advisory councils.
- Plan for staff professional development to enhance their skills appropriately for their job function and growth.
- Develop a service strategy plan in coordination with the FAS dean and provost to best utilize the proposed FAS unit computing specialists.
- Assist faculty, staff and students in transition from the UNIX mail reader “mm” to either Pine or Netscape Mail through seminars, documentation and consultations.
- Develop a customer satisfaction evaluation plan and begin implementation
- Review and redefine as identified the Camden Help Desk process to improve efficiency within Rutgers University Computing Services while improving response to our community.

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## 2. NEW BRUNSWICK COMPUTING SERVICES

### *a. General Access Services*

- Maintain stability of key services, particularly the student labs and support infrastructure, and central services run by Network Services and Systems and Operations
- Implement new training and management program for student staff work in the labs
- Reengineer email, designed for use from the desktop [1999/2000 will most likely only take us through the design phase.]
- Improve central web services, specifically search engine and maps. Other services may be agreed on jointly with University web support committee

### *b. Departmental Services*

- Finish creating UNIX support group, including security incident handling
- Move departments from the old UNIX software distribution system (Track) to the new one (TINT)
- RUNet 2000: provide leadership and staffing for RUNet 2000 implementation, particularly in the areas of the departmental transition plan and PC support services
- PC strategy: develop strategic plan for PC support services, including standard software, software distribution tools, and remote administration

- Make systematic efforts to find all computing staff in departments; make sure they know about services available to them.
- Begin implementation of distributed support model on at least one additional campus [if funded]

*c. User Services*

- Reorganize NB web pages
- Work with HR to do training of departmental staff in email and web-related areas.
- Provide user training and support for ACS email transition
- Finish new training facility in Hill basement
- Implement recommendations of Service Strategy Task Force in consulting and help desk areas. This includes implementing support standards, preparing the help desk to ask as first-level support for all Rutgers University Computing Services services, and developing a plan to monitor the quality of services.
- Put Frequently Asked Questions database into production, including contributions from all major areas, and regular review of data.

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### 3. NEWARK COMPUTING SERVICES

*a. Computing and Information Technology*

- Provide university-wide leadership in the integration of information technology resources to support the missions and activities of the campus.
- Provide leadership, advice and direction to the campus computing committees.
- Provide campus leadership in the development and continuous change of the public computing facilities to meet the needs of the campus.
- Enhance the Education Series by improving the quality and scope of courses offered.
- Encourage and support faculty research through participation in Internet 2 and implementation of RUNet 2000.
- Promote departmental support through the departmental coordinators and the distributed support model.
- Promote and expand the collaboration and cooperation between Computing Services, the Teaching Excellence Center (TEC), and the library.

*b. Community Service and Support*

- Facilitate campus outreach programs through departmental consulting and support.

*c. Customer Service and Support*

- Improve customer satisfaction with services provided.
- Design and rewrite web pages to align with University Computing Services' web pages and to reflect services provided to the campus.
- Improve operation and staffing of the student labs through development of appropriate policies, improved hiring, training and supervision of lab assistants, and improved reporting and repair of hardware and software.
- Improve operation of CS-Net group through implementation of trouble reporting and tracking application.

*d. Connectivity*

- Support the implementation of RUNet 2000 through leadership and participation in campus planning and preparation.
- Provide leadership in supporting existing campus local area networks transitioning to RUNet 2000.

*e. Communication*

- Develop and carry out a communications plan to inform the campus faculty, staff, and students of the mission, function and responsibilities of Computing Services.