
Office of Telecommunications

2001-2002 Annual Report July 1, 2001 to June 30, 2002

Acknowledgments:

This report was produced by Telecommunications and Networking Services, *a unit of Information Technology Services*, The Pennsylvania State University, University Support Building 2, University Park, PA 16802

A copy is available at <http://www.tns.its.psu.edu>, under "About TNS"

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At a Glance... *Some of the Years' Highlights and Numbers*

Integrated Backbone (IB)

PSU.EDU Registered Hosts	163,859 (Peak)
Commodity Internet Bandwidth	140 Mbps
Contracted Internet2 Bandwidth	80 Mbps contracted. 130 Mbps maximum burst
Total IB connections to date	568
TNS-Designed IB Connections - 01/02	216
TNS-Installed IB Connections - 01/02	75

Local Area Networks

TNS-Installed LANs – 01/02	38
Total TNS-Installed & Supported LANs to date	374

Residence Hall Activated Ports

UP	11,422
Non-UP	4,144
Total	15,566

Penn State Call Center

Total Calls Handled	398,947
C.H.A.M.P.S. (Call Handling and Message Phone Service)	33 Events
Operator Assisted Conference Calls	887
Meet-Me Conference Calls	1643

UP Voice Mailboxes 5,342

\$15.8M Program at UP

	85% complete as of June 30, 2002
Projected Final Number of Outlets	19,000
Projected Quantity of Category 5 Cabling	Over 2000 Miles
Total Number of Buildings to be re-wired	106

I. Summary

This report summarizes the achievements, activities, and ongoing projects of the Office of Telecommunications (OTC) for the fiscal year period covering July 1, 2001, through June 30, 2002. This was the first period of applying the new budget model developed during prior months, and accommodating organizational changes being made as a result of restructuring Computer and Information Systems (CIS), into Information Technology Services (ITS).

The budget model provides a sustainable source of funds for telecommunications and computer and network security. It is funded through a combination of student information technology fee funds, a new Telecommunications Access Fee levied on all full-time faculty and staff, and a permanent one-time transfer of funds coupled with lowered service charge-back to departmental budgets. It supports a defined plan for sustaining internet connectivity, replacing cabling infrastructure, maintaining adequate services between campuses, and other aspects of services previously provided by OTC.

In conjunction with the creation of ITS, those within the OTC who had responsibility for billing, for focusing upon potential uses of emerging technology, for training, for publicity, and for analysis of client's telecommunications and networking needs and initiating work processes, were transferred to other units now having those responsibilities. The organization that remains, Telecommunications and Networking Services (TNS), is responsible for provision of the majority of services previously offered by OTC, as well as for short-term planning, equipment evaluation, and deployment strategies. It is hoped that by making these changes, the skills developed by those leaving OTC will be leveraged to afford broader overall benefit to the ITS organization. Those remaining in TNS will continue to focus their energies upon creating and offering the same type of leading-edge services with which they have been associated in the past, and utilizing the marketing, training, service billing, long term planning, and customer support functions provided by peer ITS units.

Steady progress was made toward completion of the multi-year DGS-funded \$15.8M "Information Infrastructure Upgrade" program at University Park campus, and on introduction of new services. The few remaining percent of DGS-funded work will be completed by the year's end. Among the services introduced during the year are two of particular significance. The first is an ITS-developed high-speed wireless networking service, which affords the combination of security, scalability, and ease-of-use necessary for widespread deployment within the University. Though this service is offered on a cost-recovered basis, and therefore subject to availability of funding by those wishing to arrange for it, there is hope coverage areas will grow from those planned in portions of Shields, Telecommunications, and University Support Buildings, and at the Capital Campus. Similarly, it is expected the second service, ITSs' "Voice-over-IP" service, will likewise grow from its initial "production" deployment (in the Student Services area of the new MBNA Building). Both of these technologies are poised for growth during the upcoming year, and will help keep Penn State among the lead institutions in terms of information technology services. Of course, other services were retired or introduced during the year as well, and are mentioned in the report.

II. Accomplishments

New Budget Model

Changes in technology and regulation have created Information Technology (IT) funding issues for all colleges and universities, and particularly for large research universities such as Penn State. As a result, a new budget model, designed by the Committee on Telecommunications Funding, went into effect at the beginning of this reporting period. The budget was created to answer the funding needs and services provided by the TNS and SOS units of ITS to ensure that Penn State would continue to have a reliable, secure and robust core network, yet at the same time allow individual units to invest in local networking capabilities as they deem best for their own needs

The principles guiding the formation of the new budget model led to the creation of two broad service categorizations within TNS: "Common Good" and "Individual Good." Common Good services are funded centrally, while Individual Good services are charged to the individual units opting to use them. The new budget has lowered the long distance and dial tone charges at University Park as well as eliminated the monthly charges for backbone interfaces at, and below, 155 Mbps.

\$15.8M Project Nears completion

The fifth and final phase of the multi-year, DGS-funded \$15.8M expansion and improvement of the telecommunications infrastructure at University Park is 85% complete. Phase E, which involves infrastructure upgrades in 25 buildings on the University Park campus, is expected to be completed October 1, 2002. When completed, the Project will have rewired 106 buildings and the majority of the 325 general purpose classrooms, added approximately 42,500 jacks in 19,000 outlets, created a campus-wide Telecommunications Room card access system, installed new videoconferencing systems in 11 locations throughout campus including the creation of 2 state-of-the-art interactive teaching facilities in Willard and Wartik buildings, and used over 2,000 miles of Cat 5e cable.

Comprehensive information on the Project is available at <http://www.tns.its.psu.edu> under "Special Projects."

Deployment of Voice-over IP

Penn State's University Park campus telephone service is provided by a circuit-switched system based on a Verizon-provided Centrex service. The University has committed to replacing, over time, all circuit-switched telephones with a system that uses Penn State's Integrated Backbone for the transport between telephones and between telephones and central services. The technology to accommodate transmission of voice-based communications over networks which can use the Integrated Backbone is commonly referred to as Voice-over-IP (VoIP). In preparation for the production deployment of VoIP, a formal RFP process was released on June 30, 2001 (IP Voice System Proposal, RFP #8315M). Bids for meeting the requirements of the RFP were solicited from 24 different companies. Over half of those companies attended a mandatory bidder's conference on July 16, 2001 and nine proposals were received on August 21, 2001. The contract was ultimately awarded to AT&T for Cisco IP voice system components on December 21, 2001. Over the next few years, the current campus telephone service will migrate to a voice-over-IP approach. Penn State is reportedly among the first Research 1 universities taking this approach.

Initial VoIP deployment locations will be activated during the next reporting year and will be restricted due to infrastructure limitations, however, it is planned that the majority of current phone sets at UP will be replaced within 3 years. Support for circuit-switched technology, such as the Merlin phone system, will be discontinued as those services currently provided by the Merlin

products are no longer able to satisfy the University's needs. Merlin phone systems currently in use will continue to be maintained until July 1, 2006 however, no new Merlin processors will be installed.

Eventually, a single campus network will carry most all campus communications. This will provide greater efficiency and offer interesting opportunities for reducing costs such as voice and broadcast video, while at the same time broadening the capabilities of telecommunications and computing within the University to include videoconferencing and real-time document collaboration.

Plans are now also being defined to enable the use of VoIP technology by other Penn State campuses in upcoming years.

Conversion to Videoconferencing-over-IP

In an effort to more fully integrate voice, video and data technology as well as to expand the capabilities of video, a comprehensive multi-year plan to enhance Penn State's video-related services including public Penn State videoconference rooms (excluding Penn College and off-campus sites such as Harrisburg Eastgate and Downtown Center) was modified to expand videoconferencing capability from an ISDN-only environment to utilization of the University's statewide IP-based Integrated Backbone network for videoconferencing events. The availability of Videoconferencing-over-IP (VCoIP) marks another significant step toward the integration of voice, data, and video traffic at Penn State over a common internal network – the Integrated Backbone. Usage costs for VCoIP services may also be significantly less than those of ISDN for like bandwidth connections, without sacrificing video quality. Instructions to orient new users in the use of VCoIP have been posted on the TNS Web site.

Expansion of Video Bridge Options

Expanded conference mode options were made available on the Penn State Video Bridge during this reporting year. Video bridges are required to enable three or more sites to participate in a videoconference. The University's bridging service is offered as an alternative to commercial video bridging services and is available to all Penn State departments. In addition to the standard "voice activated" conference mode option, the new "continuous presence" conference mode options allow for the simultaneous display of multiple participants during a video bridged conference. Continuous presence helps to enhance the multi-point videoconference experience by providing a "live" feeling and constant interaction with multiple sites. The new options are available at no charge to all users of the Penn State Video Bridge, but must be selected when the conference is scheduled.

Telecommunications Projects

At University Park Locations

TNS has also been actively involved in planning, design and construction of the telecommunications systems for many construction projects underway at University Park locations, including:

- New fiber installations at 30 locations.
- Re-wiring to 4 buildings.
- New Information Sciences and Technology Building.
- The new West Campus Housing construction. The new housing facility, which is 95% complete, will add 490 beds in 199 apartments located in 17 new buildings.
- New Eastview Terrace Housing design. These new units, located on the site of the old Eastview Terrace Housing units will add approximately 800 beds. Site work has already begun and the old housing units have been demolished.

Additional Telecommunications Projects underway at University Park locations:

- New Chemistry Building design completed and construction in process.
- Palmer Museum Renovations.
- New Pasquerilla Spiritual Center design completed and construction in process.

In addition to the projects above, infrastructure maintenance continued on a number of aging copper cables located throughout campus. The cables, which are air pressurized to keep them dry, had significant air leaks and were becoming problematic. Leaks were located and repaired, and sections of bad cable were re-spliced or replaced. New ductbanks were also added at key locations throughout campus to provide relief for congested areas and replace collapsed duct sections. Also started was a program to replace old fiber connectors which have become expensive and difficult to obtain.

At Non-University Park Locations

OTC has also been actively involved in planning, design and construction of the telecommunications systems for many projects underway at Non-University Park locations, including:

- Abington: Lares Union Building renovations and expansion completed.
- Beaver: The design for the new Administration Building completed. The design includes the encapsulation of the existing campus-wide switch room that resides in the underground basement of the existing Administration Building, so that when the old building is demolished around it, the switch room will remain intact.
- Berks: Design of the addition, and rewiring of the existing part of the Franco Building. The Franco Building is considered the “front door” to the Berks campus.
- Fayette: Design underway for the new Multi-Purpose and Community Center.
- Great Valley: Activation of voice, data, and video systems was completed at the new Safeguard Scientific Building.
- Harrisburg: Rewiring of one of the largest Penn State-owned buildings, the Olmstead Building, which encompasses over 206,000 square feet.
- New Kensington: New Conference Center and Classroom building. The Conference Center features a multi-purpose conference room that can accommodate up to 150 people, three smaller rooms that hold 16 people, two classrooms, and faculty and staff.

Additional Telecommunications Projects underway at Non-University Park locations:

- Behrend: Design in process for the new Research and Economic Development Center.
- McKeesport: Construction of the new Student Union Center.
- York: Library addition and Performing Arts Center.
- Schuylkill: New fiber to Classroom Building.

Voice Mail Services

The number of voice mailboxes at University Park has grown to over 5,000. Currently, the University Park Voice Mail system handles roughly 10,000 calls per day, with approximately 1/3 of those calls being forwarded to the recipient's mailbox greeting as a result of a busy signal.

University Park departmental contacts are now able to access weekly voice mail report data, such as call processing statistics for heavily called menu-driven applications (such as in the Admissions, and the Registrar's Office), through a password protected Web-based format. Previously, the reports had to be captured in real time by TNS' System Administrator, saved manually, and distributed via e-mail. The output is now captured in the data directory, which is then put into an HTML format and posted on-line.

III. Network Enhancements

Integrated Backbone (IB) Services

During this reporting year, Penn State's Integrated Backbone (IB) has supported interconnectivity of over 450 Local Area Networks and over 160,000 hosts at Penn State, as well as providing access to other computer resources and information available via the Internet. Two hundred and fifteen IB connections were designed, and 75 IB connections were activated, bringing the total number of backbone connections to 568.

Due to the continued exponential growth of traffic carried on the University's network, an upgrade to the University Park portion of the IB - to its fifth technological generation - was completed during this reporting year. In addition to providing for growth, this upgrade was needed to support new connection methods to the IB and to eventually enable new services, such as support for new, Internet2-compatible methods to implement "Quality of Service" (QoS). The upgrade has increased both the capacity and the capability of the core network, as well as prepared it for the replacement of the old ATM architecture. As with many changes in technology, this upgrade has also caused the gradual discontinuation of other connection methods and services. These multi-year phase-outs are available in detail on the Service Options of the Integrated Backbone Web page at <http://www.tns.its.psu.edu> under "Products and Services – Integrated Backbone Services."

Gigabit Ethernet at University Park

As new and existing network applications being used at Penn State evolve to embrace high-resolution graphics, video and other kinds of "rich media," the need for an increase in bandwidth is continually expanding. As a result, the latest version of Ethernet networking technology, Gigabit Ethernet, became available at the University Park campus during this reporting period. Gigabit Ethernet offers 1000 Mbps (Million bits per second) raw bandwidth. This represents a tenfold increase in the highest speed Ethernet connection that was currently available on Penn State's Integrated Backbone - and is now the fastest connection speed at the University Park campus.

Gigabit Ethernet provides scalability and flexibility to handle new and evolving applications and data types that require more bandwidth, enabling University faculty and researchers to transmit more detailed video and three-dimensional images to colleagues throughout the world.

Inter-campus Bandwidth (Circuit) Upgrade

In order to meet the University's increasing demand for telecommunications service at campuses other than University Park, the inter-campus circuit capacity (circuits that connect each campus to University Park) was increased from a few Mbps (Million bits per second) to a single DS-3 (45 Mbps) circuit at each of 22 campus locations. This upgrade has yielded an approximately 10-fold increase in effective bandwidth available at each of these campuses, with only a modest increase in central cost.

High-Speed Wireless Networking Service

In coordination of work with the Center for Academic Computing, TNS designed a standards based wireless system that meets critical security, scalability, and ease-of-use requirements. The system, which was put in to production in the third quarter of the reporting year, uses the 802.11b "WiFi" wireless networking technology which transmits at speeds up to 11 Mbps, and IPsec.

A wireless LAN is a flexible data communications system that can be implemented as an extension to a wired LAN within a building or on campus. Wireless LANs transmit and receive data over the air

(via radio frequency technology), minimizing the need for wired connections. With wireless LANs, users can access shared information, receive electronic mail (e-mail) and access Penn State computing resources or the Internet without looking for a place to "plug in." Thus, wireless LANs combine data connectivity with user mobility.

Penn State's Wireless LAN service is designed for use by "wireless capable" laptop computers, such as those that have either a built-in wireless network chipset or a PC Card installed in a PCMCIA slot. These wireless LAN adapters (or radio cards) provide an interface between the client network operating system (NOS) and the airwaves via an antenna. Because the nature of the wireless LAN is transparent to a user's NOS, applications work the same as they do on wired LANs.

The development of high-speed wireless networking technology has created a wireless network model that can be deployed by ITS at any of Penn State's campus locations.

Access Modem Project/Internet Access Services

Approximately 40% of the University's roughly 3,500 digital modems are at non-University Park locations, and managed by TNS. These campus modems have digital dial-up capability in the form of ISDN (Integrated Services Digital Network) lines. The ISDN connection supports both ISDN dial-up (at speeds up to 128 Kbps) and analog dial-up (at speeds up to 56 Kbps). Digital modem technology enables faster access speeds, as well as decreases the possibility of encountering a busy tone. ITS staff will continue to review campus modem usage statistics in order to formulate recommendations for upgrades and further expansion of campus modem pools.

Laptop Access Ports

To help accommodate the growing number of laptop computer users at Penn State, TNS has been aggressively increasing the amount of laptop computer access ports at the University's campuses. These ports enable students, faculty, and staff with laptop computers to connect to Penn State's Integrated Backbone, to obtain access to Penn State computing resources and the Internet from different areas on campus. Most of the over-2000 access ports, now available at Behrend, Berks, DuBois, Harrisburg, Hazleton, Lehigh Valley, McKeesport Shenango, Worthington Scranton, York, and University Park, with over two-thirds in Library Facilities, have been installed and are being managed by TNS. These ports are available to anyone who has a Penn State Access Account. They enable laptop access to virtually all Penn State Internet resources (such as e-mail and the World Wide Web), as well as use of any software already loaded on the laptop. A listing of Penn State public "wired" laptop computer access port locations is available at <http://www.tns.its.psu.edu> under "Products and Services – Networking Services."

Local Area Network (LAN) Services

During this reporting period, 38 LANs were installed, bringing the total number of TNS-designed, installed and supported LANs to 374. In addition many 10 Mbps LANs were given new LAN hardware and were upgraded to a faster 100 Mbps speed. Each TNS-supported LAN is serviced through an IB connection.

To ensure that all TNS-designed Penn State LANs used by students, faculty and staff members are able to handle the higher speeds and new services and protocols supported by Penn State's Integrated Backbone, a newer-technology, switch-based approach, called "Ethernet Switching," is now exclusively being used in all designs to connect local area networks.

IV. Student-Focused Issues

Residence Hall Internet Services

Over 15,000 students who lived in residence halls during this reporting year, and had their own computer, activated the Internet connection port(s) available in their room – a figure that represents a 10% increase compared to the previous years activated port count. The Internet connection is available at no additional charge to residence hall students and is significantly faster than the fastest dial-in modem.

Bandwidth Monitoring

Excessive use of Internet bandwidth from computers located in Penn State's residence halls grew to record levels. As a result, despite aggressive increases in bandwidth to the Commodity Internet and to Internet2, individual bandwidth metering controls from these computers had to be implemented. These limit the total bandwidth that can be used by any individual residence hall computer. A previously used, manual, labor-intensive, process to monitor bandwidth was replaced with a program that automatically monitors the amount of bandwidth used by residence hall students and issues warning notices to those exceeding established weekly limits. In a collaborative effort, TNS, Office of Housing and Resident Life, Association of Residence Hall Students, and the council of Commonwealth Student Governments developed a plan to ensure that sufficient amounts of bandwidth are available to support University research and academic interests, while simultaneously making it possible for Penn State students to freely access the World Wide Web. Implementation team members report that the plan is working well and that both overall University needs and individual needs are being met.

Long Distance Service

TNS provisions direct dial long distance telephone service for residence hall students from the convenience of their room or other campus phones through Penn State's AT&T ACUS On-Campus Student Long Distance Program. The program provides individual billing and other special student features. Direct dial service is often the least expensive way to place a call from campus.

Another, somewhat similar, long distance calling program for off-campus students is slated to go in to effect with the beginning of the fall semester.

V. New Initiatives

New Cellular Plans

Cellular service continues to grow in popularity, and the cellular service providers continue to make changes to their networks. Although the service is gaining more widespread use, the industry is still maturing. One indication of this is the rapid changes made by carriers in the types of plans offered. To allow maximum choice to faculty and staff, contracts have been entered into with AT&T Wireless Services and Verizon Wireless Services. Both plans offer discounted service and both plans allow discounted personal cellular plans to students, faculty and staff.

Web-based Training Site

Penn State faculty and staff continued to take advantage of the no-fee telecommunications training services offered by OTC. Over 1,000 people received hands-on training on key systems, Centrex/Meridian Business Sets, Voice Mail, and Videoconferencing systems during this reporting

period. Included in that total are people who attended the Fall Telephone, Voice Mail, and Videoconferencing Workshops that were offered.

In addition to Instructor-led trainings and Workshops, work on a prototype Web-based training site was undertaken during this reporting year. The site will provide self-taught telephone and voice mail training tutorials and instructions via a Web-based platform. The initial tutorials are being designed to introduce users to the University Park Voice Mail system as well as to features of their telephone sets by virtually "walking" users through the steps needed to use the features and capabilities of their telephone and voice mail service.

With the advent of the C&IS reorganization, the training function for telecommunications services was transferred to the Teaching and Learning with Technology (TLT) unit within ITS. The additional resources provided by the TLT unit will help to improve the telecommunications training provided within Penn State.

IPv6 Trial

A limited-scope engineering trial of the next version of Internet Protocol, known as "IPv6" was introduced during this reporting period. IPv6 will enable Penn State to accommodate the anticipated growth in the number of registered computers on the Internet (IP addresses) and will also help pave the way for future service enhancements available via Penn State's Integrated Backbone, such as "Quality of Service" and "Anycast." These services will enable students, faculty and staff to conduct real-time communications and applications over Penn State's network by allowing multimedia traffic (such as voice and video) to coexist with traditional data traffic on the same network. In addition to greatly expanding the number of Penn State's Internet addresses, IPv6 will also provide enhanced features such as flexibility, extensibility, and new security features. The goals of the trial include furthering Penn State's knowledge of IPv6 and providing IPv6-based connectivity with other institutions, as preparation for the Protocol's broader deployment. Other goals are to provide an opportunity for Penn State staff members to work with IPv6 while keeping the University up to date with the development of Internet2's next generation network. The trial, which is limited to 20 participants, is designed to maintain the "trust model" adopted by the University and applied to the Integrated Backbone.

VI. COI

Network Operations Center

The Network Operations Center (NOC), a service area of TNS, provides support for troubles related to Penn State's telecommunications services, by continually monitoring and maintaining the University's voice, video and data networks. As part of this operation, all interruptions or other problems with telecommunications services that are reported to the NOC are given a "case number" for tracking purposes. To further improve service, the NOC created a customer satisfaction survey form that is automatically sent out via e-mail to those reporting telecommunications problems. The Survey references the problem case number and, in the interest of monitoring and improving NOC services, asks the recipient to answer related questions. To better establish the area as a network operations center and not a help desk, the NOC changed their telephone number from 863-HELP (3-4357) to 865-4NOC (5-4662). By releasing the old number for future use, it will become available for use by the University where ever it may be more applicable for a Help Desk that may handle calls that are more generalized than those handled by the NOC.

Timely Notification of Telecommunications Work and Deadlines

One of the "best practices" developed by OTC during the past few years has been to request timely notification of telecommunications work that is needed by Penn State organizations during the summer months. Again this reporting period, notices of deadlines are posted to Telecommunication's listservs well in advance for work to be billed during a fiscal year and for work that is to be completed during the summer months. Timely notifications provide a tremendous overall benefit for the University community by enabling contacts to complete Telecommunications Service Requisitions (TSR) prior to the deadlines so that OTC can schedule work in an orderly fashion. This eliminates much of the disruptions stemming from high-priority, last-minute requests. The practice also minimizes the amount of extra-cost overtime needed to accommodate these efforts, leading to overall savings to the University, as well as to individual departments.

MySoft.Net

A Web based version of the Telecommunication Management System, Mysoft.net, was implemented during the last half of this reporting year. The improvements in the application functionality make internal processes more efficient and accurate. Because the database platform is now standardized, the TNS computing staff are able to provide better technical support. This application upgrade also allows TNS to move forward in automating such processes as submitting Telecommunications Service Requisition (TSRs) and obtaining budget approvals. Currently the benefits of these changes are only being realized internally, but the end result is more efficient and improved customer service for the University community.

Conversion of Telephone Drawings to an Electronic Format

A long-term project to hand-drawn telephone prints to an electronic format (AutoCAD) was completed. During the process, all prints were also updated and corrected to show locations of existing copper telephone lines.

VII. University Relations

OTC Open House

OTC held an Open House in its University Support Building 2 location on October 18th from 10 a.m. to 3 p.m. Over 35 exhibits including displays and demonstrations on current telephone technology and proposed new videoconferencing equipment were showcased. Tours of the Penn State Call Center and Telecommunications Distribution Room were also offered. Approximately 200 University faculty and staff members attended, several from campuses other than University Park.

Take-Our-Daughters-to-Work

For the fourth year in a row, OTC participated in the University-sponsored *Take Our Daughters to Work* program by hosting several workshop sessions for girls in grades six through twelve and their mentors. Participants experienced how staff members use modern telecommunications tools, such as cellular telephone technology, and resources such as e-mail, voice mail, and the Internet to communicate and collaborate with each other. Participants also experienced an interactive videoconference, and took a tour of the Penn State Call Center.

Penn State Call Center

In addition to providing all manner of general University information, scheduling use of interactive video services, and accommodating other call management services, the Penn State Call Center handled over 300,000 requests for directory assistance during this reporting year. That number

represents over 800 calls per day. For many, a call answered by the Call Center represents their first verbal communications with Penn State.

Use of the Call Center's Call Handling and Message Phone Services ("C.H.A.M.P.S") continues to grow with 11 departments utilizing the service for a total of 33 events during this reporting year. The service provides departmental message coverage during the lunch hour, holidays, or other occasions when such need may arise, by having the departmental phone number forwarded to a special Call Center Message Service phone number. The Call Center's Audio Conferencing services, "Meet Me" and "Operator Assisted" Conference Calling, also continued to be heavily utilized. During this reporting period, the Call Center handled over 1,600 "Meet-Me" conference calls and 887 "Operator Assisted" conference calls.

Telephone Safety Procedures

As a result of several bomb threats made to University offices following the September 11th terrorist attacks on the World Trade Center, OTC sent out a reminder to faculty, staff, and students about University telephone safety procedures that should be implemented in the case of threatening or harassing phone calls. The University recommends that all employees and students reference the Telephone Safety information at <http://www.tns.its.psu.edu/services/student/phone/safety.html> to become familiar with the procedures, including the "Call Trace" feature which can be activated from any University Park telephone. Because the "Call Trace" feature is not available at non-University Park locations, campus personnel and students at those locations should follow the Telephone Safety steps outlined at <http://www.tns.its.psu.edu/services/student/phone/safety-nonUP.html>. They should notify their campus Police Services office immediately in the case of threatening calls.

True PSU Service Changes

True PSU is a long distance program initiated in 1994 as part of the Penn State - AT&T comprehensive program, providing long distance service to faculty and staff from their homes. The intent of this program was to provide an alternative long distance service using the Penn State network scale to drive reasonable rates with no fixed monthly fees. Despite significant changes in the long distance industry over the past 8 years, this program has provided benefits to many Penn State faculty and staff, particularly those who make a relatively low number of calls each month.

Over the past few years the charges for long distance have fallen, dragging down the profit margins for the carriers. AT&T, Sprint and MCI Worldcom are all showing the results of this in lowered stock prices and continued downsizing. The continued increase in email, cellular, pre-paid cards, and shifts in the long distance industry, have also made a significant impact on the traditional long distance market. As a result, ITS stopped taking new accounts as of July 1, 2002 and, will grandfather the program. All existing accounts will remain active, but the entire program will end as of June 30, 2003.

September 11th Fund Drive and Holiday Helpers

In response to the September 11th terrorist attacks on the World Trade Center, employees of OTC held a "sweet tooth" bake sale. The funds raised were donated to the general September 11th fund.

Each December, the OTC "Holiday Helpers" help make the holidays special for those in need by sponsoring a needy family or child in the area. The funds from this year's Soup and Bread sale raised money to purchase items such as children's clothes, toys, and gift certificates for the "adopted" family/child.

VIII. Appendices

Appendix A University Park Voice Mail Statistics

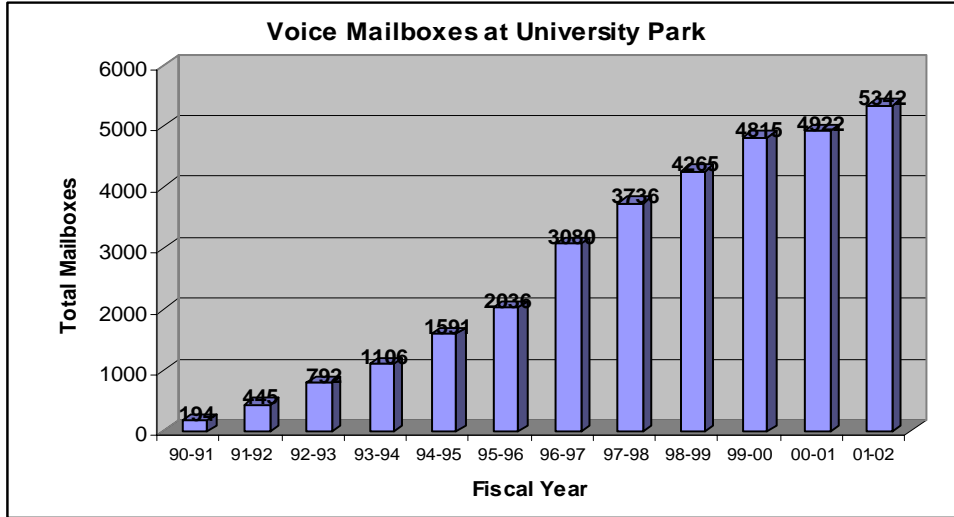
Appendix B Penn State Integrated Backbone Statistics

Appendix C Penn State OTC-Installed Local Area Networks (LANs)

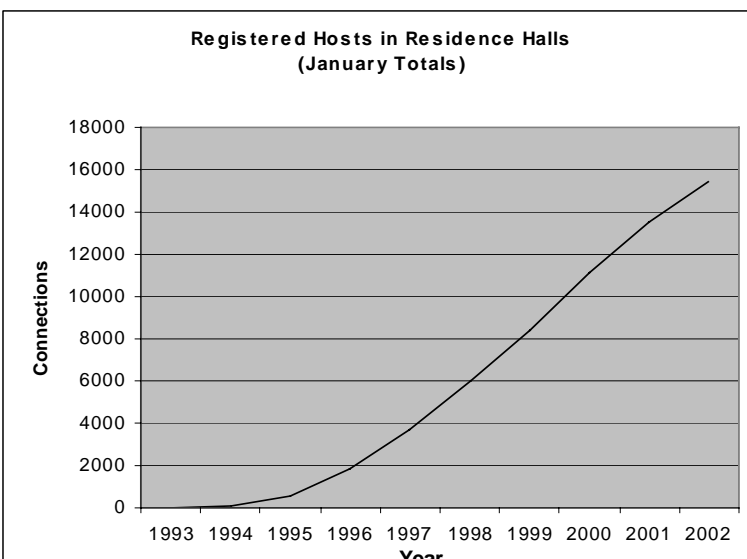
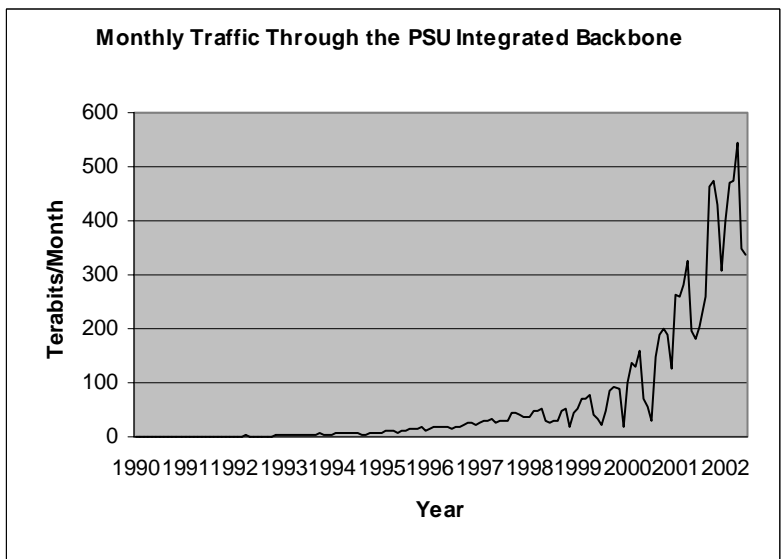
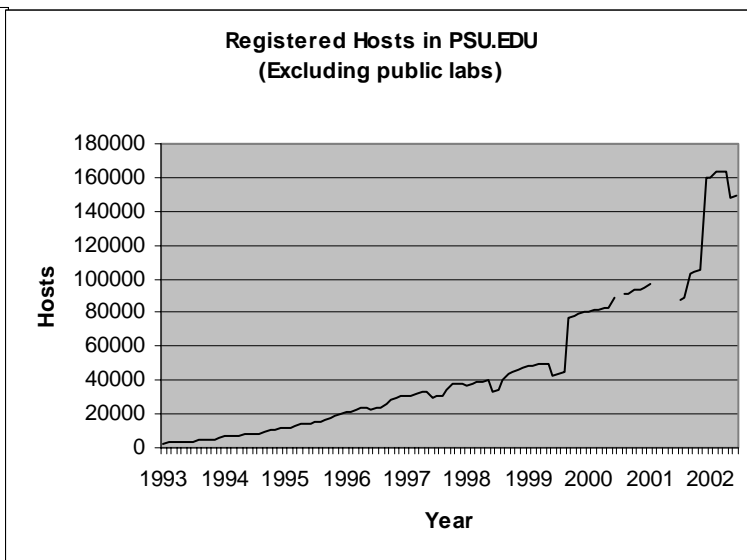
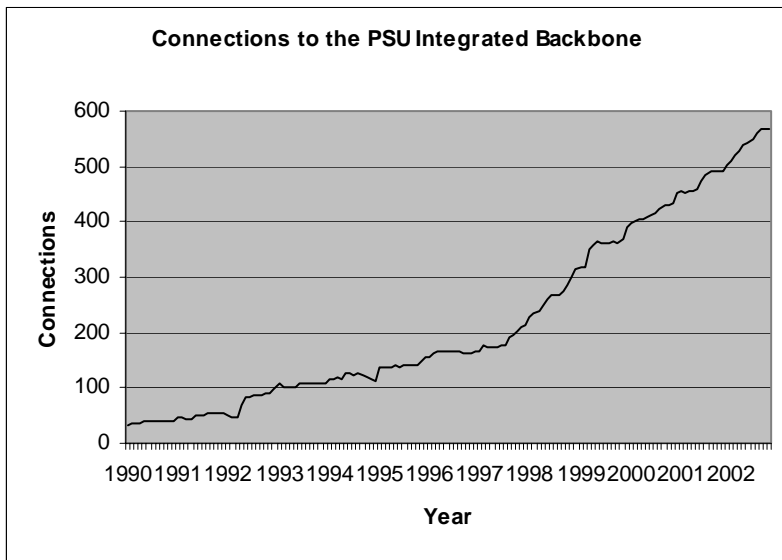
Appendix D Penn State Student Residence Hall Internet Connection Statistics

Appendix E Penn State Call Center Statistics

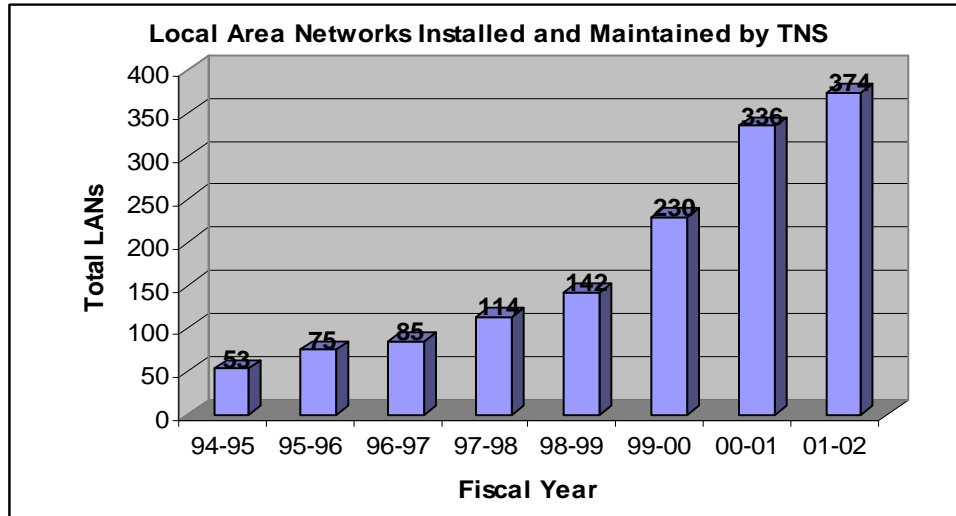
APPENDIX A
University Park Voice Mail Statistics



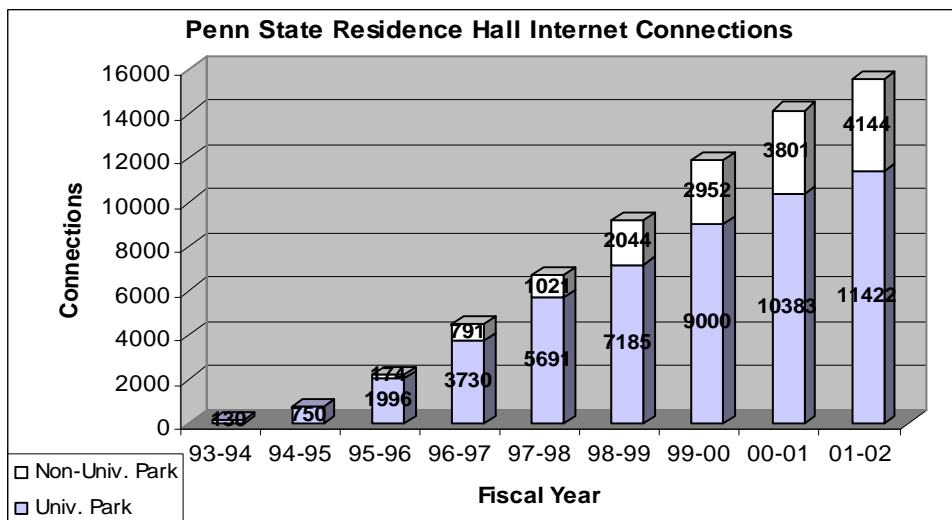
**APPENDIX B
Penn State Integrated Backbone Statistics**



APPENDIX C
Penn State TNS-Installed Local Area Networks (LANs)



APPENDIX D
Penn State Student Residence Hall Internet Connection Statistics



**APPENDIX E
Penn State Call Center Statistics**

