TECHNOLOGY PLAN
2010-2015
Revised – 03-16-2010

Introduction

Demands for technology continue to grow as academic and administrative users look to enhance student services with effective and innovative technological solutions. This demand often leads to funding requests beyond budget capabilities. A Technology Committee with campus wide representation has developed and now maintains a Technology Plan to regulate technological investments, create strategies for use of technology and document campus standards. The campus Technology Committee has shaped new investments in technology as well as the continuation and replacement of existing technologies.

Technology investment at Broome Community College is not limited to computers and networking equipment, but includes all aspects of technology as defined in the Technology Plan. The Technology Plan outlines the various technological areas supported on campus, identifies strategies for use of each technology, provide a rationale for those strategies, and suggest future directions for use of technology on campus.

Composition of the committee:

The Campus Technology Committee has been permanently established with the following representation

Co-Chairs:
- ❑ Director of the Computing Services
  1. John Petkash
- ❑ VPAA designee appointed from Academic Affairs membership
  1. Andrea Wade

Membership:
- ❑ 4 Representative from Academic Affairs to include at least one Dean, one department Chair and two teaching faculty representative of all academic divisions.

  1. LA- Mary Donnelly

  2. STEM- Jen Musa

  3. HS- Harry Wandell has been serving; he'd like to continue but cannot attend during the fall semester.

  4. BPS- Nathan Walz

- ❑ Representative from the Teaching Resource Center

1. Carine Surdey

❑ Representative from Media Services

1. Jesse Wells

❑ Technical Assistant

1. Gary Kohut

❑ VPASA representative

1. Cindy Mowry

❑ Individuals who have been actively serving and contributing but do not fill a defined position on the committee

1. David Isabella

2. Robin Petrus

Current Environment

Strategies/Rationale

Future Directions

Funding Sources

Technological Resources

Funding Sources

Student Computer Laboratories

Computing laboratories are provided for instruction, supplemental learning activities, and as general purpose, open student work environments. Over 800 computers exist in student computer laboratories. Laboratory sizes range from 1 computer to 30.

Planning Strategies

The campus technology committee has created a rotation schedule for the replacement of approved student lab areas. The rotation schedule is designed to ensure the timely replacement of student lab computers while maintaining a level allocation of spending each year. In addition, a fixed amount of funding will be allocated each year for lab printer replacement. This coordinated and effective process has resulted in the removal of requests for student lab replacements from other budget request processes.

Future Directions

The historical push toward the creation of new student computing lab areas has been replaced by a trend toward curriculum specific applications of smaller numbers and in non-centralized locations. The development and implementation of Web-based applications which provide licensed campus software to users with off-campus Internet capability may have a dramatic

effect on current student computer lab strategies. In addition, the high processing capability, quality, and cost reduction of new personal computers may increase longevity and effect rotations. The removal or addition to current inventory and replacement schedule are reviewed and approved through the campus executive committee.

Multimedia Classrooms

Current Environment
Classrooms equipped with technological resources are a valuable aid to academic instruction. Traditional lectures are illuminated with the use of state of the art devices. As of the 2010 academic year, nearly all general purpose classrooms on campus are equipped with multimedia – minimally this includes a data projector and screen, a VGA and sound cable for a laptop and a wireless or hard-line network/internet connection. The Registrar's office makes every effort to match the needs of instructors with existing multimedia areas.

A new electronic switching system has been implemented to operate multimedia equipment. The goal is to provide faculty with consistent access to and use of the equipment in each general purpose classroom, without need for complex wiring and switching configurations, and without a need for easily misplaced remote control devices. These self-contained systems have been placed in 5 multimedia rooms as of Fall 2009.

Strategies/Rationale
Standard guidelines have been created to categorize multimedia classrooms according to available resources.

Level 1 Multimedia Room:
- Data projector and screen
- A VGA and sound cable for a laptop
- A wireless or hard-line network/internet connection.

Level 2 Multimedia Room:
- Data projector and screen
- Computer with sound, and network connection.
- A VGA and sound cable for a laptop
- A network/internet connection.
- DVD Player
- An switching and control system

Level 3 Multimedia Room:
- Data projector and screen
- Computer with sound, and network connection.
- A VGA and sound cable for a laptop
- 2 network/internet connections.
- DVD Player

- A fully enclosed media switching and control system, with integrated sound (Extron)

Level 4 Multimedia Room:
- Smart Technology (either a Sympodium, or a Smartboard with built-in short throw data projector)
- Data projector and screen (depending on Smart Tech)
- Computer with sound, built in DVD, and network connection.
- A VGA and sound cable for a laptop
- 2 network/internet connections.
- A fully enclosed media switching and control system, with integrated sound (Extron) (potentially controllable with Sympodium)
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Optional items in any Multimedia room (or older rooms) may include:
- Digital Presenter (Document Camera)
- DVD/VHS Player
- Microphone sound system and speakers
- Overhead projector
- Miscellaneous switches, wiring, cables, special, projector mounts etc.

Future Directions

The Technology Committee recommends furnishing all suitable general purpose classrooms with multimedia capability. The Technology Committee recommends furnishing other instructional spaces with multimedia equipment based on suitability of the space and on the prioritization of available resources. The Multimedia Subcommittee of the Technology Committee has set a goal that all general purpose classrooms should have some level of multimedia by Fall 2010. **It is anticipated that by Fall 2010 all classrooms will meet the Level 1 requirements, 50% of classrooms will be at Level 2, 20% of classrooms will be at Level 3 and at least 14 classrooms will be at Level 4.**

At the present time, not all multimedia classrooms have a consistent interface. Emerging technology will be used to work towards making all multimedia environments as consistent as possible. The mechanical switching system will continue to be replaced with the new electronic switching system. This will provide faculty with consistent access to and use of the equipment in each classroom, regardless of brand and model numbers. By achieving this goal, faculty members will feel comfortable in any multimedia room in which they find themselves scheduled.

In order to enhance the use of instructional technology, the Web and Media Resources (WMR) Department will continue to work with the Technology Committee to provide a regular cycle for equipment replacement to improve performance and reliability. Planning strategies for current equipment are under review. Efforts are being made to create platform standards and to coordinate system changes based on usage and technology adoption (such as the increased use of personal laptops). The Technology Committee will strive to ensure that multimedia

classrooms offer consistent software and that software upgrades could be accomplished easily and efficiently.

Investigation of new multimedia concepts and equipment continue to be researched. ITS, WMR and academic department's will forward research information to the technology committee for review. The Technology Committee shall approve changes to the guidelines for multimedia room equipment. The Multimedia Subcommittee will continue to make recommendation to the technology committee on possible retrofits for older classrooms, and additional opportunities for updated media systems.

Funding Source

A fixed amount of technology fee funding is allocated each year to create new multimedia-equipped classrooms and to replace or upgrade existing classroom multimedia technology. A multimedia classroom subcommittee of the technology committee meets annually to review and prioritize classrooms and make recommendations for using this funding. Given the goal of the Technology Committee that all general purpose classrooms have some level of multimedia by Fall 2010, it is recommended that the amount of technology funding be increased for Fall 2010 by $32,000.

Evaluation and Implementation of New Technologies

Current Environment

The Multimedia Committee, a subcommittee of the Technology Committee, solicits and requests from the campus community to install or update technology in instructional spaces on campus. Individuals requesting an upgrade or installation of new technology are asked fill out a form/complete detailing their request and providing an associated rationale. The Multimedia Subcommittee investigates the requests and recommends action based on room suitability and available funding. Room suitability is based both on the physical space (security, lighting, ceiling height, etc.) and on the room usage level as determined by input from the Registrar's office. Multimedia classrooms are categorized as Level 1. Level 2, Level 3 or Level 4 (see Multimedia Classrooms).

The Multimedia Subcommittee is also available to make recommendations about technologies which are not included in the Level 1, Level 2, Level 3 and Level 4 multimedia classrooms but may be needed to meet the needs of students and faculty. Faculty interested in obtaining a different type of instructional technology should make a written request detailing their specific instructional needs and goals. The Multimedia Committee is available to meet with an individual instructor, review requests and suggest possible solutions. The Multimedia Committee makes recommendations based on the needs of the instructor and students and available funding while working to maintain an environment that is suitable for the overall general use of instructional spaces

Strategies/Rationale

A subcommittee of the campus Technology Committee that is dedicated to evaluating and implementing instructional technologies serves the needs of the entire campus community by making the best possible use of technological resources. The committee can keep track of where instructional technology is used across campus and can "recycle" older equipment into suitable rooms whenever possible. The committee can work with instructors to investigate new technologies as they become available and make recommendations to the Technology Committee for implementing strategies to best serve the needs of the college community.

Future Directions

The Multimedia Committee will continue to serve as a liaison between the campus community and the Technology Committee and will maintain a comprehensive view of classroom instructional technology available on campus. The Multimedia Committee will strive to come up with creative and effective solutions that meet the instructional needs of the campus. The Multimedia Committee will design documentation that will streamline the process for requesting new instructional technologies on campus so that further evaluation can take place.

Funding Source

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Faculty and Staff Computing

Campus faculty and staff must be provided with adequate computing tools to help provide quality services to students. The campus technology committee helps to monitor the technology gap between those that lead in the development of technology and those that might fall behind by providing methods to determine needs and request new or replacement equipment.

Planning Strategies

An instructional faculty computer survey is distributed annually during the fall term for full time regular and adjunct faculty; providing a method to request new desktop computers. Once collected, the technology committee uses this information to prioritize requests and recommend distribution. Since the college has no specific means for funding faculty computers, requests are filled in priority order when funding comes available. Installation is intended to be completed by the end of the spring semester.

Departmental or Divisional budget are used to provide funding for all other requests for computers that were not funded through this process. In order to ensure that new equipment functions properly and is ready for the fall semester purchases of new or replacement technology must be made by the end of each academic year or June 1st. By this time, recommended system platform versions will have been announced and efforts will begin to upgrade desktop computers, multimedia stations, educational technology, Media Services laptops, and Learning Assistance and Teaching Resource Center areas. The purchase of computing equipment by June 1 will provide:

- The ability for all campus areas to prepare and implement the common campus desktop platform recommendation for the fall semester.

- Information Resources and other campus personnel to the ability to provide advice in terms of feasibility and support for new technologies.

- Specification review and testing will be performed to better guarantee successful integration with campus resources.

- Volume pricing and vendor comparison can be accomplished to potentially save money and find high quality products and support.

- Advanced implementation can be accomplished allowing for user testing and an adjustment before the semester starts.

Future Directions
Coordination of technological change is essential. Study of the change process will continue. Enhanced strategies for understanding and managing the issues related to the purchase and implementation of new technology will continue to be developed.

Distance Education

Current Environment
The Online Academy is the virtual umbrella that unites all components of distance education at BCC, including online courses, programs, and support. The faculty and staff who make the online initiative possible/govern include: an academic Dean who is designated as the Dean for Distance Learning and holds responsibility for overseeing distance education, TRC Instructional Designers (a Senior Instructional Designer, two full-time Instructional Designers, and a part-time Instructional Designer), clerical support, the WebCT/ANGEL Administrator, the BCC HelpDesk administrator and student workers. A number of other offices on campus, including Information Technology Services (ITS), the Registrar, Academic Advising, Learning Assistance Center, and the Library are instrumental in contributing to the success of the program.

The TRC Instructional Designers are the indispensible core of professionals that The online academy provides pedagogical and technical support to faculty who are creating courses and learning materials for delivery on the internet and the classroom. They serve as an instructional design partner for faculty content experts, collaboratively teaming with faculty, BCC support staff and members of the SUNY Learning Network Instructional Design team to assist faculty in the design, development, testing, and support of computer-mediated, asynchronous instructional materials/courses. They conduct workshops, demonstrations, and training sessions for faculty; write documentation to assist faculty in course development; track course development progress, monitor ongoing courses; and troubleshoot problems in technology and course delivery for online courses. The Instructional Designers also collect data about online courses, produce print and online materials for faculty, students and advisors, function as the liaison with the SUNY Learning Network, maintain the Online Academy Website (http://sunybroome.edu/online) and serve on a Distance Learning Steering Committee.

During the Spring 2010 semester BCC offered 163 fully online or blended course sections (45 in SLN ANGEL and 118 in WebCT) in which 1287 students participated (unduplicated head count). Online courses are available exclusively via the Internet and can be taken "anytime, anyplace" the student has access to a computer. Students view course material, receive and submit assignments, and communicate with the instructor and classmates online. At BCC these courses follow the semester schedule and are not self-paced. A blended course is a combination of face-to-face instruction with online learning. In a blended course, a significant part of the course learning is online and as a result, the amount of classroom seat-time is reduced, but not eliminated. The goal of blended courses is to join the best features of in-class teaching with the best features of online learning to promote active independent learning and reduce class seat time. Blended courses are often referred to as hybrid courses.

Additionally, the college offered 233 web supplemented sections using WebCT. Web supplemented courses provide online resources, such as course outlines and overviews, assessment information, reading lists and other. However, participation online is optional for the student. No WebCT in Fall 2010

BCC's use of campus course management systems to support fully online and web-enhanced courses has consistently increased approximately 10% a year over the past several years. After a careful review of all available platforms, the campus is currently transitioning the course management system to the Angel platform through the SUNY Learning Network. Beginning in the fall of 2010, ANGEL will be the only designated campus course management system.

BCC has been approved by the State Education Department to offer the following degrees in a fully online modality: Clinical Laboratory Technician AAS, Computer Technology AAS, Early Childhood AAS, Liberal Arts and Sciences General Studies AS, and Human Services AS. Additionally, academic Deans have identified the following programs to be developed in the online modality: Computed Tomography, Computer Security, Histologic Technology, Quality Assurance, Health Information Technology, Liberal Arts, Engineering Science, and Business

Administration. BCC must secure approval for offering fully online programs from SUNY, the State Education Department, and some program accrediting bodies. Not Technology

BCC has an agreement between the Faculty Association and Administration regarding Internet-based courses. This agreement covers stipend, enrollment, load, evaluation, training requirements, and property rights (see Article 50 of the Faculty Association Contract). Online courses are developed by faculty on a voluntary basis with the approval of their department. The College pays a one-time single stipend per faculty member regardless of the number of Internet-based courses they develop. Not technology

In 2006, the college administration developed an alternate method to compensate faculty to develop online courses to be "owned" by the College. One or more faculty are paid to develop a "work-for-hire" course which is agreed upon, reviewed and owned by the department and assigned by the department chair. Work-for-Hire courses serve the College by having a shelf life of at least three to five years; they should be usable by instructors other than the creator. Not Technology

It is expected that student learning objectives and outcomes are consistent across all course offerings, regardless of the method of delivery. The same instructors who also teach face-to-face courses teach most sections of online courses. The TRC has developed a BCC Course Review Rubric based on the original Fund for the Improvement of Postsecondary Education (FIPSE) Quality Matters research. The tool may be used by the course developer and by a peer reviewer from the department. Review of all new online courses by an instructional designer is required, but is not consistently done. Review of continuing online courses may be done though the faculty evaluation process as outlined in the Faculty Association contract. Not technology

Strategies/Rationale

BCC initially embraced the online learning environment in 1997 when the College was asked to participate in the SUNY Learning Network (SLN). The Teaching Resource Center (TRC) provided support and training for online faculty, and a TRC coordinator assumed the duties of academic coordinator for distance education. Between 1999 and 2009, BCC has expanded the support staff for distance education to include three full-time and one part-time campus Instructional Designers (IDs). During these years, the campus dramatically increased the number of courses and the number of sections taught online and is now in the process of completing a full transition from WebCT to the ANGEL course management system. The Dean for Distance Learning and the Senior Instructional Designer have replaced the TRC coordinator and work together to oversee distance education   History not a technology strategy ?

The Distance Learning Steering Committee was created as a result of a campus investigation into the possibility of completing a Distance Learning Institutional Capability Review (ICR) by the New York State Education Department. The Distance Learning Steering Committee is comprised of the Designated Dean for Distance Learning, the Senior Instructional Designer, an Academic Advisor, the WebCT/ANGEL Administrator, the Staff Associate to the VPAA and

representative faculty teaching online and serves to review online issues and make recommendations to the Technology Committee and the VP for Academic Affairs and VP for Administrative and Financial Affairs. The committee membership is designed to bring together all the relevant constituents in order to provide academic leadership, planning and oversight for Distance Education. The committee has helped to set campus direction in the selection of course management systems, to direct the consolidation of multiple course management systems into one, and to establish more clearly defined leadership responsibilities for Distance Education initiatives.

The TRC works closely with faculty to ensure that the quality of BCC's online courses mirrors that of courses offered on-campus. Training and support for faculty developing online, blended, and supplemented courses is offered by the Instructional Designers in the Teaching Resource Center. This includes the face-to-face and online training for faculty in ANGEL and support for faculty developing and teaching online. Each faculty member developing an online course has an Instructional Designer as their technical and instructional design partner. The IDs help instructors develop pedagogically sound online courses, offer drop-in hours several times a week, work one-on-one with faculty by appointment, and respond to email and phone inquiries. The TRC also provides extensive print materials available in the TRC's Distance education library collection or through the TRC webpage http://bcctrc.wordpress.com/ or the Online Academy's webpage http://sunybroome.edu/custom/online/.

Future Directions
The Distance Learning Steering Committee is examining strategies to increase the consistency with which online courses are reviewed. The Distance Learning Steering Committee is also currently working on the implications of the current redevelopment of courses in the ANGEL platform on the established Work-for-Hire process.

Preserving the property rights of individual faculty members to online course content presents some logistical problems. If an instructor is not able or is unwilling to teach a course, it may require the time-consuming redevelopment of that course by another faculty member. Departments are currently trying to develop some redundancy among faculty who can teach a variety of online courses to alleviate this problem.

Planning for online learning has been decentralized and is at the discretion of the department. Campus-wide planning is needed to ensure support for our growing number of online degree programs. Planning issues that need to be addressed include:

- Growth:
  With 10% growth a year - managing growth and development of online, blended and web-supplemented courses is critical.

- Management:
  The role of the Teaching Resource Center and the Online Academy needs to be clarified.

- Course Management System:
  Updates in Course Management Systems and resulting course migrations have cascading effects. Dependability, integration, cost, staffing, training, instructor readiness, ease of use, flexibility, features and hardware/software requirements all need to be considered.

- Hosted or onsite CMS:
  Consider advantages, cost, staffing needs, service, and flexibility of having our CMS hosted off site or hosting at BCC.

- Virtual Campus:
  Provide remote services for distance learners across the campus (advising, bookstore, financial aid, tutoring, etc.)

- Hardware and Software to support the distance education initiative:
  As the number of media rich Distance Education courses increases, the need for an efficient mechanism for storage and delivery must be identified. This is particularly essential given that our current course management system (SLN ANGEL) is hosted offsite by SUNY and our contract fees are partially determined by usage and storage space on their servers. Alternative storage areas outside of the ANGEL environment need to be researched (iTunes U, on-campus streaming media server, etc.) as well as authentication methods that might be necessary in the event of protected subject matter.

Features for Consideration in Course Management System (CMS) Changes/Upgrades

- Administration
  - Flexibility in course template generation (ex: faculty who want two semesters to develop a new course)
  - Must integrate with operating system, database platform and portal in use at BCC (Banner and Luminus) (i.e. single sign-on with User Name and Password synched with campus).
  - No date requirements on supplemental courses (even available in the middle of the semester)
  - No software to be installed or upgraded on local PC's
  - Either 24-hour turn-around or local administration for supplemental courses
  - Must have a way to process Adds/Drops on a daily basis
  - Flexibility of template– customizable templates for departments developing courses (ex: Health Sciences template, Computer Science template)

- Costs
  - Flat fee based on FTE will assist with budget planning
  - Staffing needs – Instructional Designers, IT Administrator, Database Administrator, migration help, etc.
  - Hosting vs. contracting for management

- o Additional hardware needs

- General
  - o As similar as possible to current CMS to lower the learning curve and inconvenience
  - o Minimal training requirements

- Features
  - o Tests and Quizzes
    - o Timed testing option
    - o Ability to import quizzes and tests (ex: test banks, Respondus)
    - o Multiple attempts on quizzes, with the highest grade being recorded (used by faculty as a study tool for students)
    - o Display of student statistics (class average, etc.) and tracking (how long it took to complete)
    - o Automatic grade release to students in grade book area
  - o Selective release
    - o Time/date control for individual module components (Test/Quizzes, discussions, assignments, etc.)
    - o Selective release to individual students (ex: Make-up exams & allowing students early access to module components)
  - o Integrated grade book
  - o Secure FTP
  - o Synchronous components - Real-time Chat area & Whiteboard
  - o Student tracking with history of login, hits on content pages, etc.
  - o An HTML Editor

Funding Source

Student Help Desk
The increased amount of computing technology requirements for students has never been higher. Students are exposed to a variety of applications from the classroom and laboratory to web based campus services and course management systems for distance education. A help desk area has been developed to answer questions and address issues that student may have from both technical and functional areas. As of the fall 2004 semester the student help desk area supports over 40 open hours each week. It is staffed by students and managed by the Computing Resources department.

Planning Strategies

Student work is economical. Some funding comes from budget however many students are funded through Federal aid which is no cost to the college. A knowledge system has been developed to organize information and provide a source for answers to questions and training materials. This system is updated and adjusted continually and is the main source for our computing guide and web page documentation.

Future Direction

A goal of our continuous improvement efforts is to have a help desk area with no customers. However, vast technical growth and a large gap in computing knowledge of students have shown a growth in help desk service needs. Hours of operation for the help desk are likely to expand. A full time position to maintain technical equipment, provide training, and manage this area may be appropriate as it continues to grow and develop.

BCCToday – Student Portal

The migration path to the portal we now call BCCTODAY began with a system developed in house in the early 1990's called HORNET or Helpful On-line Resource NETwork. Broome CC was an early adopter of the student Kiosk concept and built this access method "in-house" for students to gain access their own student records. When WWW or web based services began to become popular, in particular Web registration, Broome CC moved to a Web for Student product provided by SCT. Then as portal technology improved and cost dropped we moved to embed the Web for Student (WFS) product within the portal along with WebCT, campus E-mail, and other services.

From a technical prospective, the campus portal concept facilitated a single "sign-on source" logon for several separate technologies and provided a common associated username and password for all system users. It also provides for authentication to various campus wide licensed software which protects and validates our license agreements.

BCC AWAY - Citrix Solutions

BCC away. Citrix Solutions, Xenapp.
Solution provider Citrix Systems Xenapp Presentation Server is utilized to provide secure remote off campus access to BCC's campus IT resources and to provide services to two "thin client" labs on campus.
Based on terminal services technology, all applications are installed on and processing is done by a farm of servers located in the computer center. This minimizes the effort needed to maintain applications on each desktop computer and allows access from multi-platform devices.

Apps.sunybroome.edu is the secure web based front end to this technology allowing access from off campus. Users are able to access campus software such a Office 2007, Minitab and other licensed software without having to install the software or pay for licenses. Apps is used for remote secure access to other internal services including desktops, FTP, BASIS, administrative and vendor/consultant access.

Currently running Xenapp Presentation Server 4.0, this application is one and a half generation's behind current platform. New version supports enhanced features such as clientless access, increased performance and administration. Costs for upgrade include one-time professional support and increased yearly license fees. Xenapp has been chosen as the only remote access service to internal and secure campus systems. The platform continues to develop, improve and offer more features. Citrix has been stable as a company and continues to innovate with new technology. Consideration of upgrading to the latest generation should be discussed.

Strategies/Rationale

Future Directions

Funding Source

Citrix solutions are used in education to deliver course-related applications to students on and off-campus. The Citrix "Application Gateway" is secure, simple for users and adaptable to almost any access scenario, providing a common user-interface no matter where the access.

Applications are installed on the Citrix server farm providing efficient maintenance, ease of upgrading, and often better pricing than the per-student counterparts.

Providing remote access to licensed campus software eliminates the need for students to purchase software and perform upgrades on their home PC's. Further benefits include end-user, multi-platform support, such as Microsoft Windows and Apple Macintosh OS X. Off campus access can be through high-speed ISPs such as Road Runner (recommended) or modem connections like America Online.

Future Directions
Budgeting needs to include the cost for additional Citrix servers as demand grows, software upgrades and new purchases, along with the costs associated with the increasing demands placed on technical support.

Technological Resources

<u>Telephone System</u>
Telephone System

BCC purchased the NEC IPX2400 telephone system from a lease contract about three years ago. The current system supports over 700 analog and digital phones, fax lines, and security and environmental monitoring lines. Time Warner Telecommunications supplies 72 outbound and inbound circuits for local and long distance dialing. The college also owns our voicemail system a UM8500 unified communications server, our operators attendant consoles BAS, and our call accounting server AIMworx. Primary support for these systems is provided by ITS with a yearly maintenance contract from NEC for second and third level support.
The IPX2400 model is no longer manufactured by NEC and support by the manufacturer for this model will discontinue September 2011. ITS is currently looking at replacement options. NEC has proposed a SV8500 model replacement that can use much of the currently invested hardwire components along with enhanced features such as email integration, failover redundancy, Corporate Instant Messaging, improved phones and improved VoIP capabilities. E911 location capabilities. ITS is investigating improvements to 911 call location capabilities. Most calls from campus to emergency 911 agencies are not capable of providing room or building location.
The current campus network infrastructure requires significant overhaul to be able to support a full VoIP implementation. Traditional phone service will remain necessary for the foreseeable future.

Strategies/Rationale

Future Directions

Funding Source

<u>Mainframe Resources and Information Systems</u>
BCC has maintained a long standing relationship with SunGard SCT for Student, Human Resource, and Financial information system software. The SUNY system has formed a relationship with SunGard SCT to provide state wide discounting on future products.

Future Directions
A core team has been formed to investigate the future direction for campus Information System software. Visits have been made to several colleague institutions and a BPR (business process re-engineering review) is being planned.

<u>Networking and Infrastructure</u>

Current Environment

The campus information systems network infrastructure consists of a collapsed gigabit Ethernet backbone configured in a star topology using multimode and single mode fiber optic cable. The center core is located in the Business building and consists of a Foundry SX800 high capacity and high density network chassis installed in 2009. The campus server farm is also located here. Approximately 120 distribution and access layer switches reside in the buildings and are generally Hewlett Packard Procurve and Foundry Ethernet layer 2 managed gigabit switches. 50 wireless access points reside among the buildings on campus and provide unauthenticated access to the Internet and are centrally controlled and managed and monitored with Enterprise level devices from Cisco systems. The total campus pipeline to the Internet is currently 80 megabits per second. The campus internal network containing critical and confidential information is protected with multiple layers of protection including border firewalls, vlan segmentation, antivirus/antispyware protection, vulnerability scanning, network access control (NAC) mechanisms, and acceptable use policies.

The network infrastructure provides the critical communication link among all campus information and business systems. Reliance on this infrastructure has become critical and when not available, business functions cannot continue. Requests for expansion of network resources and increased capacity continue to escalate on a month by month basis.

The college strategy for network infrastructure improvements and expansion depends on year to year budget availability. In recent years many areas of the campus have had substandard wiring installations replaced with properly routed and terminated category 6 copper cabling. Many areas are still in need of upgrading. In 2008, new multi mode and single mode fiber was run between buildings on the north side of campus replacing twenty year old cable and providing some redundant routing capacity. New network switches have been installed in many areas replacing outdated devices.

Network technology continues to change at a rapid pace. The original internet numbering system has become obsolete and will be replaced with IP Version 6, requiring updating and possibly replacing all network equipment in the future. The college needs to continue replacing substandard wiring and consider all new installations for Voice over IP compatibility, Power over Ethernet (PoE) capability and 10 gigabit Ethernet bandwidth.

Strategies/Rationale

Future Directions
Large quanities of old coax and other cabling exists and will need to be removed to make space in existing conduit and spaces.

Security
Information protection applies to several areas of computing and networking. Hardware and software, as well as environmental and physical security, and the treatment of information as an object that can be bought, sold, deleted or damaged are all areas of concern and in need of security.

Planning Strategies

A campus Computer and Information Security (CIS) committee has created documentation guides to increase awareness of security issues. The CIS committee meets routinely and consists of members from all areas of campus (faculty, staff, and administration. A campus security program has been developed and approved.

For security purposes the College manages and supports two networks: a Secure Campus Network and a Public Network.

The Secure Campus Network is an internal network protected by a firewall that supports Academic and Administrative functions for faculty, staff and student use. This system provides access to the Internet, public and private folders (M: drive), campus information systems (BASIS), etc. The firewall is designed to filter out inappropriate information exchanged between the Secure Campus Network and the Internet. To ensure the continued functioning of this network only secure computers may be connected.   Secure computers includes those devices that are college owned, only used on the Secure Campus Network, and have never been connected to an off campus network or private Internet Service Provider (ISP) such as Road Runner, AOL, EarthLink, PronetISP, STNY, etc.

Information Resources provides the campus with anti-virus software called Sophos. This protection is installed on all secure computers. Updates to protect secured computers from new threats are routinely downloaded to each permanently connected machine through a process installed on our Secure Campus Network. Portable devices, in particular those that leave campus, pose a greater security risk primarily due to the difficulty of deploying and maintaining Sophos virus protection. These portable devices include computers, PDAs, and many kinds of portable memories (disks, USB thumb drives, etc.).

A Public Network has been created for portable devices to eliminate the risk to the Secure Campus Network. The BCC Public Network provides Internet access only. This network was established to provide a means for faculty, staff and students to connect to the Internet from on campus using personally owned or college owned equipment that has been connected to an outside network and may not be protected. Our Public Network has access via several wireless links and wired public access locations. Data files may be transported from public devices to the Secure Campus Network using FTP. Locations for connection to the Public Network and instructions for transporting data can be found in the Teaching Resource Center (TRC) or at http://www.sunybroome.edu/~TRC.

Future Directions

To continue strategies to monitor and test the network traffic and the equipment connected to it. To continue use of third party vendors for assessment and training needs.

Continue to develop disaster recovery strategies and plans to prepare for business continuity in case of emergencies.

Continue to investigate alternative room security systems and devices such ID cards for access.

Investigate the use of cameras and video technology to improve monitoring in high traffic or highly sensitive areas.

Investigate Security awareness training possibilities for all faculty, staff, and students.

Video Conferencing
Current Environement
Three IP based non-portable Video conferencing devices are available on campus. B111 has a Polycom Viewstation PVS. L105 has a Polycom VSX7000 and the Libous room has a Tanberg Profile 42.
All three of these units depend on the public Internet where no guarantee of service or quality of service is available or should be expected. Video conferencing requests are minimal at this time. Service and conference quality va
Video Conferencing.
ries from good to occasionally poor. If future demand increases and there is an expectation of guaranteed service and quality a dedicated video conferencing link and static conference room space may need to be looked at.

Strategies/Rationale

Future Directions

Funding Source

Equipment Disposal

General Technology: Non-Computing Equipment and Technology

General non-computing equipment is used in a variety of specialized classroom and laboratory areas on campus, including such areas as Sciences, Health Sciences, Technology, and Humanities. Purchases of general, non-computing equipment are primarily funded through departmental budgets, grant-funded purchases, and use of a Technology Fee collected from students.

Planning Strategies

Planning for the purchase of general non-computing equipment takes place initially at the departmental level. Department faculty/staff identify and prioritize equipment requests, then work with the Dean/Director on identifying potential and appropriate sources of funding.

Departmental Budget Funded General Technology

Within the process of developing the departmental budget, equipment items may be identified and included, as deemed appropriate. Departmental budgets are reviewed and approved from through the Dean/Director and the Vice President, ultimately being incorporated, where feasible, into the college budget.

Summary

Funding Source	Purpose	Process
Departmental Budgets	Used for equipment purchases, where appropriate	Identification of items occurs and is approved through the budget development. Selection of needed equipment is done by one or more department members. PO is issued upon approval of individual with responsibility for that budget.
Technology Fee	Targeted funding for computer and non-computer related equipment and technology on campus	Executive Council allocates funds on the basis of a prioritized list of requests. Each vice-president has a process for having a divisional review and prioritization of all proposals submitted from their respective areas. The prioritization considers how the requested expenditure will allow the College to fulfill one or more of the major campus goals. Requests for funding that impact the greatest number of students often receive the highest priority. Some funding is used to assist smaller projects that have potential for moving the college ahead in some developing technology
Donor Gifts and Grants	Equipment in support of	The J. Donald Ahearn

	initiatives which meets grant specifications.	Technology Fund is an example of funding currently utilized for initiatives and equipment in the Technology, Engineering and Computing areas. Approval of expenditures from these grants occurs through the administrative structure, with support from the Office of Sponsored Programs.
Public and Private Grant Requests	Equipment appropriate for external funding	Department identification of appropriate requests, approved by the Dean/Director, are submitted to Executive Council via a Request to Seek Funding Form, as facilitated by the Office of Sponsored Programs

Future Directions

Possible future directions for the planning and acquisition of general technology equipment include:

- Establish a schedule of maintenance and predicted life span of very costly (>$50,000) equipment for planning purposes.
- Establish a process and replacement schedule for clerical equipment (copiers, typewriters).
- Establish a process for review of service and maintenance contracts for general technology equipment.

<div align="center">Funding Sources</div>

<u>**Student Technology Fee**</u>
The purpose of the BCC Technology Fee is to provide targeted funding for campus technology. The operative definition of technology is a broad one - it includes both general technology and computing equipment, software and/or infrastructure needs related to technology for the entire campus. Given that Technology Fees are assessed to students, as a general rule expenditures from Technology fee funds will be made only for direct student benefit and use.

Allocation of the accrued Technology Fees is a primary means for departments to acquire general technology equipment using campus funding. The majority of the budgeted funds are allocated during the fall semester, and the remainder in the spring semester. Although a portion of the fall allocation is set-aside for replacement of and upgrades of computing-related equipment in accordance with the Campus Technology Plan, a portion of funds is designated as available for general technology needs. The Budget Officer initiates the process of identifying appropriate expenditures (see below), and a prioritization process is employed. The process is periodically reviewed by the Executive Council.

Process:
The process for Technology Fee distribution is as follows:
- Forms and instructions are distributed by the budget officer
- Proposals go to academic division chairs / coordinators for departmental prioritization
- Proposals go to Deans/Directors for prioritization by Division
- Proposals go to VPs for prioritization
- Proposals go to Exec Council (with VP prioritization)
- Executive Council approves tech fee proposals

Campus Wide Initiatives

Budget Set a Side

Grants
The college avails both public and private funding sources for equipment, where appropriate. When a department, in concert with its Dean/Director, identifies grant funding as an appropriate source of financial support for a project, the Director of Sponsored Programs will provide assistance in the process. Under his/her guidance, a Request to Seek Funding form requesting Executive Board review will normally be completed prior to submission of the formal grant application.

Foundation

New York State Initiatives