University of Maryland Eastern Shore
Information Technology Plan

2003-2007

Submitted by: Ronald G. Forsythe, Jr., Ph.D.
Vice President, Information Technology & Outreach
Richard A. Henson Center
University of Maryland Eastern Shore
Princess Anne, MD 21853
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SUMMARY OF OBJECTIVES

Objective 1: UMES will continue to work to close the ethnic and socioeconomic gaps in student computer ownership rates................................................................. 8

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Objective 26: Campus phone feeds should be upgraded to PRI service.

Objective 27: Implement a Cable Management System.

Objective 28: Activate the Call Accounting System for Faculty and Staff.

Objective 29: Upgrade CATV service as a component of the Utilities Master Plan Upgrade.

Objective 30: Perform a cost comparison between using cable provider vs. satellite feed at the head end.

Objective 31: Conduct a feasibility study of Desktop, Laptop, Tablet, and PDA technologies to evaluate the feasibility of their use at UMES.

Objective 32: Update the plan for maintaining and refreshing technology in classrooms.

Objective 33: Information Technology will be staffed at a level to provide adequate service and response time for users.

Objective 34: Sufficient IT Staff to provide technical assistance/maintain SMART classrooms is required.

Objective 35: Additional staff to support the growing requirement for training activities is required.

Objective 36: Implement a Content Management System to make web space management more efficient.

Objective 37: Additional training is needed to help faculty create and use websites.

Objective 38: Student training for web publishing.

Objective 39: Use funding from warranty repairs and refunds for IT Staff training. This will ensure that certifications are current and provide additional incentives for staff.

Objective 40: Maintain telecommunications capability for off-site faculty to access campus network resources.

Objective 41: Maintain an environment for web-assisted and web-based course content.

Objective 42: Provide opportunities for distance education using partnerships with the regional cable television provider.

Objective 43: Maintain a current IT Security policy.

Objective 44: Revise tools used for evaluating service and monitoring resource usage.
INTRODUCTION

This strategic plan provides a high-level review of the Information Technology resources and proposes strategies to meet existing and future demands. The plan is based on factors such as UMES’ current and planned functional needs, its current IT environment, and available yet rapidly changing IT technologies. As a “living plan,” implementation of its strategies and recommendations will be monitored and modified as necessary by the UMES IT Steering Committee.

OVERVIEW

Technology is having a dramatic, long-term impact on higher education as it transforms institutions into networked computing environments.

- The rapid growth of the Internet, Internet2, and local area networks has altered the technological landscape and patterns of interaction among faculty, staff, and students.
- Faculty members are adopting new instructional tools such as course web pages, courseware, and a host of other innovative applications.
- To expand student populations and accommodate logistical issues, universities are also leveraging technology to offer distance education curricula and supplementary courses.
- Along with opportunities that technology provides, universities are challenged with maintaining a modern infrastructure, retaining skilled IT personnel, and effectively implementing instructional technology within budget limitations.
- As more users become dependent on networked systems, obtaining benefits from the application will require greater coordination and cooperation between individuals and units.

CHALLENGES

FUNDING INFORMATION TECHNOLOGY

Identifying consistent funding for routine technology upgrades is necessary for ensuring that students, faculty, and staff have access to reliable and relevant services. This is even more pressing during times of fiscal austerity since information technology budgets are often considered expendable and are among the first funds that are sacrificed to maintain the integrity of academic and student programs. If reasonable technology refresh has been maintained for several years, it is likely that a 12 to 18 month hiatus can be easily suffered without upgrades. However, when the break in upgrades starts to extend beyond 18 months and reaches 2 or 3 years, the institution is forced into a new pattern of having to make periodic widespread, costly upgrades every 2 or 3 years rather than maintaining the more budget-friendly steady state of incremental upgrades each year.

STUDENT ACCESS TO TECHNOLOGY

Student computer ownership rates on the campus were estimated to be 15% in AY’01. A survey was completed for students returning to the campus in the Fall of 2002 and the
computer ownership rate was determined to be approximately 50% for both on and off-campus students. This is close to 59.8% for Public Master I institutions reported in the K. C. Green 2002 Campus Computing Survey. However, UMES’ peer institutions reported computer ownership rates of approximately 75% and, with the exception of the HBCUs, other USM institutions boast of student computer ownership rates in excess of 80-90%. Most of the recent increase in student computer ownership can be attributed to the dramatic decrease in computer costs. However, since over 90% of UMES students receive some form of financial aid, there is still a major gap in computer ownership that must be overcome.

Annual surveys will be taken to determine the rates of ownership, whether these computers meet current standards, and the effectiveness of the initiatives that have been implemented. Current initiatives to increase student access to computers include the following:

**Waters Hall Renovation**
Waters Hall is currently being renovated to provide a centralized space for open labs across the campus. The facility has been designed to provide 24-hour access and will include support services to make this centralized site feasible and convenient. Examples include providing access to higher end computers that are generally more difficult for students to afford and providing student security escorts for students that would like the service during the late-night/early morning timeframes.

**Work with Vendors**
The university will continue to work with vendors to establish minimum standards and to identify the lowest purchase prices for computers that meet those standards. The current focus is to identify a plan that will provide special pricing for students in their junior and senior years. Once a student graduates, a special price will be offered for a new system. The computers that were used by the graduating student would be made available for use by freshmen, sophomore, and junior students.

**Board of Regents Digital Divide Initiative**
The Board of Regents secured a $400,000 investment in technology for students with significant financial need. UMES used this investment to purchase laptops that are distributed to students with demonstrated need. The laptops are distributed at the beginning of each semester using a lottery process (there are approximately 200 laptops and over 800 students with a 0 Expected Family Contribution). Students are assigned the computers as if they were library books and are expected to return them at the end of the semester. If the laptop is not returned, the full replacement value is tacked onto their semester bill. Ninety percent of the laptops are distributed via the lottery process. The remaining 10% of the laptops are used as a repair pool to replace damaged laptops. Since the loaner pool is stored in the Library, they are made available for check out by all students while studying in the Library. This initiative has provided a significant enhancement to student access to technology on the campus.
Faculty Laptop Program
All fulltime faculty have been issued laptops with docking stations, external keyboards, monitors, and mice. This set up allows the faculty to use the same computer at home, in the office, at conferences, and in the classroom. Many SMART classrooms have been established that include LCD projectors, Internet access, Internet2 access, LAN access, and docking stations. This investment in faculty technology was made so that student investments in technology would have more value.

Objective 1: UMES will continue to work to close the ethnic and socioeconomic gaps in student computer ownership rates.

Objective 2: Consider establishing formal campus-wide or department-wide requirements (or “strong recommendations”) for student computer ownership.

ADMINISTRATIVE COMPUTING

PEOPLESOFT IMPLEMENTATION
The campus student information system has been upgraded to facilitate access to information. Students are now able to register, view transcripts, and apply online. Faculty now have access to student records, advisee information, and can submit grade information online. The ability to monitor attendance online is in progress.

Objective 3: Maintain an ERP System that is web-enabled and provides secure access to student information.

FINANCIAL RESOURCE SYSTEM (FRS)
Financial data is available through FRS. FRS is maintained at the University of Maryland College Park with services being provided to UMES in an Application Service Provider (ASP) model. Account information is available online through a password protected website. User access is restricted to accounts for which prior approval has been granted.

Objective 4: Maintain a web-enabled system that provides secure access to campus financial information.

PAYROLL & HUMAN RESOURCES (PHR) SYSTEM
Human Resource data is available through PHR. PHR is maintained at the University of Maryland College Park with services being provided to UMES in an Application Service Provider (ASP) model. Information is available online through a password protected website. User access is restricted to accounts for which prior approval has been granted. The most popular application of the Human Resource system is the Online Timesheet feature.

Objective 5: Maintain a web-enabled system that provides client access to timesheets and other Human Resource requirements.
ENTERPRISE PORTAL

A portal will be established to provide faculty and staff access to campus data. This data can be used for reports, accreditations, and grant applications. The portal will be established with approved data and will allow faculty and staff to have query access to data for which they have been approved.

Objective 6: Establish a portal to improve faculty and staff access to data that can be used to evaluate student performance and the effectiveness of retention efforts.

Objective 7: Clarify the role of Institutional Research and data owners to address the concern of inaccurate data within the Student Information System.

COMPUTER MAINTENANCE AND REPLACEMENT

UMES has implemented a number of initiatives to help minimize the Total Cost of Ownership for its computer infrastructure. Specific examples include:

- **Standardizing Hardware Purchases** (using existing State contracts)
  This allows the university to take advantage of economies-of-scale when making bulk purchases and to ensure that the lowest available price for new purchases is gained. This makes hardware maintenance more efficient and cost-effective. Fewer spare parts can be kept in stock and, if necessary, emergency repairs can be implemented by cannibalizing existing equipment.

- **Minimum Hardware Standards**
  Establishing minimum hardware standards also allows the university to specify minimum software standards. This allows cost savings by not having to maintain active software licenses on outdated versions of software.

- **Homogeneous Fleet of Computers**
  Uniformity in computer hardware allows the university to take advantage of commonalities between hardware components to keep parts in stock or to cannibalize dead systems for parts that can be used in other active computers.

- **Warranty Repairs/Self-Maintainer Program**
  The university is currently a participant in the Gateway Self-Maintainer Program. This allows the university to be compensated for completing warranty repairs on site.

- **Software Standards**
  Allows the university to save money by not having to support multiple types of productivity software (e.g., word processing, spreadsheet, database, drawing). In addition, ensuring that all users are using compatible versions of the same software ensures the ability for users to communicate effectively with one another. Just as with the hardware, economies-of-scale translate into discounts when software licenses are purchased in bulk.

It is necessary to upgrade facilities and resources on a periodic basis. These initiatives help to reduce the costs associated with the upgrades.
COMPUTER LABS
Computers labs will be replaced a minimum of once every three years. This ensures that each computer will have enough processor speed, memory, and capacity to run current software versions. Otherwise, maintenance expense increases as multiple versions of the same software must be maintained to support users with dated computers. With over 212 computers in open labs, this amounts to approximately $127,000 per year as one third of the computers are replaced annually.

A list of computer labs is as follows:

School of the Arts and Professions

DEPARTMENT OF FINE ARTS
Performing Arts Center, Room 1108
8 computers
Open M-F from 8:30 am. to 4:30 p.m.

DEPARTMENT OF ENGLISH AND MODERN LANGUAGES
Wilson Hall, Room 1112
15 computers
Open M-F from 8:00 a.m. to 4:30 p.m., excluding scheduled classes and workshops.
Contact: Bernard Mattei

DEPARTMENT OF EDUCATION
Lida Brown Building, Room 1120
12 computers
Open to students from 8:00 a.m. to 4:30 p.m., excluding scheduled classes and workshops

School of Agricultural and Natural Sciences

DEPARTMENT OF AGRICULTURE
Trigg Hall, Room 1142
10 computers.
Contact: Dr. George Shorter

DEPARTMENT OF HUMAN ECOLOGY
Richard Henson Center, Room 1108
7 computers
Contact: Dr. A. Shaw
Not public; Small group instruction and development of materials by faculty and students only.

DEPARTMENT OF NATURAL SCIENCES
Carver Hall, 2119
14 computers
Contact: Mr. G. Waters.
Open to students from 8:00 a.m. to 4:00 p.m. on M - F. No classes are held in this room.
Carver Hall, 3102
8 computers
Not public; Used for physics classes and laboratories.

School of Business and Technology

DEPARTMENT OF ENGINEERING AND AVIATION SCIENCE
Tanner Hall, 1111
6 computers
Open M-F from 8:00 a.m. to 6:00 p.m. for engineering and aviation science courses.

Arts and Technologies Building
15 computers

DEPARTMENT OF BUSINESS AND ECONOMICS
Kiah Hall, Room 2117
24 computers
Contact: Dr. Dorothy Mattison and Mr. James Hayes
Open M-F from 8:00 a.m. to 11:00 p.m., subject to class schedules.

DEPARTMENT OF HOTEL AND RESTAURANT MANAGEMENT
Richard Henson Center
15 computers
Classes are regularly scheduled in this room. It is open to students from 8:00 a.m. to 11:00 p.m. on Tuesdays and Thursdays and from 9:00 a.m. to 12:00 p.m. on Mondays and Wednesdays.

DEPARTMENT OF TECHNOLOGY
Arts and Technology Building, Room 1131
15 computers
Contact: Dr. Leon Copeland
See Contact for permission to use.

DEPARTMENT OF MATH AND COMPUTER SCIENCE
Kiah Hall, 2118
18 computers
Graduate Assistants coordinate the activities in this room.
The room is regularly used for classes, but open to students daily when not being used for classes. The laboratory/room is periodically also used for Final Master's project presentations, computer workshops, on the job training for graduate students, and UMES computer workshops.

Kiah Hall, 1136A
12 computers
Activities coordinated by graduate assistants.
Open to students daily. It is used primarily as graduate assistants' office, departmental committee and multi-media room, and for tutoring.

Kiah Hall, 2120
24 computers
Used for classes

Kiah Hall, 2124
24 computers. 
Regularly for classes and for graduate assistants' offices, tutoring, departmental committee meeting room, and multi-media.

**Residence Life**

<table>
<thead>
<tr>
<th>Residence Life</th>
<th>Number of Computers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Apartment Residence Center</td>
<td>11 computers</td>
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<tr>
<td>Student Apartment Annex</td>
<td>8 computers</td>
</tr>
<tr>
<td>Cluster 6/1100</td>
<td>6 computers</td>
</tr>
<tr>
<td>Plaza</td>
<td>8 computers</td>
</tr>
<tr>
<td>Court Plaza</td>
<td>8 computers</td>
</tr>
<tr>
<td>Murphy Hall</td>
<td>7 computers</td>
</tr>
<tr>
<td>Nuttle Hall</td>
<td>5 computers</td>
</tr>
<tr>
<td>Harford Hall</td>
<td>8 computers</td>
</tr>
</tbody>
</table>

Ms. A. McClees and C. Terrell coordinate the use of these rooms. Workshops are scheduled weekly at variable times. The computer laboratories/rooms are open to students from 9:00 a.m. to midnight on Monday to Thursday, from 9:00 a.m. to 5:00 p.m. on Friday, from 12:00 noon to 4:00 p.m. on Sat., from 4:00 p.m. to 12:00 midnight on Sunday, for word processing, document preparation, and desktop publishing.

**Frederick Douglass Library**

<table>
<thead>
<tr>
<th>Library Area</th>
<th>Number of Computers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronics Resources Center, Room 1110</td>
<td>20 computers</td>
</tr>
<tr>
<td>Multi-Media Room, Room 1114</td>
<td>21 computers</td>
</tr>
<tr>
<td>Micro-Media Room (E-mail lab), Room 0114</td>
<td>8 computers</td>
</tr>
</tbody>
</table>

The room is used for database and Internet research. The laboratory is open to students from 8:00 a.m. to 10:00 p.m. from Monday through Thursday, from 8:00 a.m. to 5:00 p.m. on Friday, from 9:00 a.m. to 5:00 p.m. on Saturday, and from 2:00 p.m. to 11:00 p.m. on Sunday.

**Public Access Area - First Floor**

12 computers
Open to students from 8:00 a.m. to 1:00 a.m. Monday through Thursday, and from 8:00 a.m. to 5:00 p.m. on Friday, from 9:00 a.m. to 5:00 p.m. on Saturday, and from 2:00 p.m. to 1:00 a.m. on Sunday for on-line catalog and Internet access.

**Public Access Area - Second Floor**

6 computers
Open to students from 8:00 a.m. to 12:30 a.m. from Monday through Thursday, from 8:00 a.m. to 4:30 p.m. on Friday, from 9:00 a.m. to 4:30 p.m. on Saturday, and from 2:00 p.m. to 12:30 a.m. on Sunday for on-line catalog use only

**Public Access Area - Basement**
- 5 computers
- Open to students from 8:00 a.m. to 12:30 a.m. from Monday through Thursday, from 8:00 a.m. to 4:30 p.m. on Friday, from 9:00 a.m. to 4:30 p.m. on Saturday, and from 2:00 p.m. to 12:30 a.m. on Sunday for on-line catalog use only.

Once the renovation of Waters Hall is complete, many of these labs will be centralized to improve access and reliability of these services. Consolidating computer labs will also allow more efficient maintenance and staff support of systems.

**Objective 8:** Upgrade one third of the computer labs annually.

**Objective 9:** Pursue models that will increase student computer ownership.

**Faculty Computers**

Faculty computers should be replaced a minimum of once every three years. This ensures that each faculty computer will have enough processor speed, memory, and capacity to run current software versions. Otherwise, maintenance expense increases as multiple versions of the same software are serviced. With over 140 faculty computers, this amounts to approximately $84,000 per year as one third of the computers are replaced annually. Faculty are able to purchase computers from grants if more advanced technology is required or desired.

The standard software installation for Faculty computers includes Microsoft productivity software (Word, Excel, PowerPoint, Access), Internet Explorer, Real Video, access to the “P:” drive (web space), access to the PeopleSoft Student Administration system, Financial Resource System (FRS), and Payroll & Human Resource systems (PHR), (where applicable).

**Objective 10:** Upgrade one third of the faculty computers annually.

**Staff Computers**

Staff computers should be replaced a minimum of once every three years. This ensures that each staff computer will have enough processor speed, memory, and capacity to run current software versions. Otherwise, maintenance expense increases as multiple versions of the same software are serviced. With over 600 staff computers, this amounts to approximately $360,000 per year as one third of the computers are replaced annually.

The standard software installation for staff computers includes Microsoft productivity software (Word, Excel, PowerPoint, Access), Internet Explorer, Real Video, access to the PeopleSoft Student Administration system, Financial Resource System (FRS), and Payroll & Human Resource systems (PHR), (where applicable).

**Objective 11:** Upgrade one third of the staff computers annually.
SMART CLASSROOMS

Each SMART classroom is equipped with an LCD projector, a docking station, Internet and Internet2 access, and in many cases wireless and CATV access. Most classrooms also have a phone that can be used by faculty to request technical assistance in the event of a hardware failure or other circumstances. A list of current SMART classroom facilities is included below.

<table>
<thead>
<tr>
<th>Building Name</th>
<th>Room</th>
<th>Capacity</th>
<th>Class or Lab</th>
</tr>
</thead>
<tbody>
<tr>
<td>KIAH HALL</td>
<td>905 1123</td>
<td>55</td>
<td>Class</td>
</tr>
<tr>
<td>KIAH HALL</td>
<td>905 1125</td>
<td>55</td>
<td>Class</td>
</tr>
<tr>
<td>KIAH HALL</td>
<td>905 1132</td>
<td>50</td>
<td>Class</td>
</tr>
<tr>
<td>KIAH HALL</td>
<td>905 1134</td>
<td>35</td>
<td>Class</td>
</tr>
<tr>
<td>KIAH HALL</td>
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<td>Media Lab</td>
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<td>Class</td>
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<td>Class</td>
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<td>Class</td>
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<td>Computer Lab</td>
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<td>Class</td>
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<td>KIAH HALL</td>
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<td>Computer Lab</td>
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<td>LIBRARY</td>
<td>933 1199</td>
<td>165</td>
<td>Auditorium</td>
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<td>LIDA BROWN</td>
<td>916 1115</td>
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<td>Class</td>
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<td>LIDA BROWN</td>
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<td>PERFORMING ARTS CENTER</td>
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<td>50</td>
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<td>RICHARD HENSON CENTER</td>
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<td>Design Lab</td>
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</table>
NETWORK INFRASTRUCTURE

UTILITIES MASTER PLAN UPGRADE
The university is currently upgrading its manhole and conduit system. Due to high water tables and the proximity to the Manokin River, the campus manholes and conduits flood on a regular basis. It is imperative that the university take care not to locate splice-cases and amplifiers in the manholes unless absolutely necessary. Splice cases are subject to leaking and result in shorts in the cables that make it difficult to manage the phone lines. Similarly, shorts in amplifiers cause outages in CATV service.

INTERNET / INTERNET2 CONNECTIVITY
Internet connectivity is available through a DS3 (45Mbps) that feeds the campus. The DS3 is connected to the State’s Higher Education network (UMATS) and provides access to switched videoconferencing, the commodity Internet and Internet2 through a SEG-P agreement with University of Maryland College Park. Since all of the Internet and Internet2 traffic for the entire University System is aggregated, UMES benefits from tremendous economy-of-scale discounts for network resources.

GIGABIT ETHERNET (GigE) CORE
There is currently enough fiber capacity to maintain a GigE network core for academic buildings. At today’s standards, this will provide sufficient capacity for the data and videoconferencing traffic that the campus is expected to use for the next three years.

Objective 12: Ensure that data network core is provided at a minimum rate of 1000Mbps in all new buildings and that existing facilities are upgraded as opportunities and resources are available.

10/100MBPS SWITCHES
The majority of the network connections in student residence halls, faculty and staff offices, labs, and classrooms are connected to 10/100Mbps ports on managed switches. There are a number of locations throughout the campus where the maximum throughput will be closer to the 10Mbps rate because the buildings were outfitted with older wiring. It is not currently cost effective to rewire existing buildings as an individual project. Rewiring older buildings is now a standard practice when buildings are renovated.

Objective 13: Ensure that data network services are provided at a minimal rate of 10/100Mbps in all new buildings and that existing facilities are upgraded as opportunities and resources are available.

UPGRADE CLUSTERS
Cables that provide services to the Clusters were originally direct-buried. Due to their age, these cables are now beginning to fail and are causing outages in electrical, CATV, and phone services.

Objective 14: Enhance the reliability of voice, data, and video network services to the Clusters residence halls by installing a conduit system.
**SERVERS**

The servers that provide core services such as email, calendar, and data storage should be updated at least once every three years. This will ensure that the latest server operating systems and security patches will run efficiently on the servers.

**Objective 15:** Upgrade core servers once every three years.

**OFFICES AND RESEARCH/Demonstration Labs**

All primary faculty offices are connected to the campus network. Some of the auxiliary offices and labs have not been connected to the campus backbone. Many of these are located in the farm area of the campus which has recently seen significant capital investment and construction. The Utilities Master Plan Upgrade will address this shortcoming for many of these facilities. Others will be connected as additional new buildings are located in the area and the cost for connectivity at these sites drops.

The research and demonstration labs in the core academic buildings have network connectivity available; however, some are not actively being used.

**Objective 16:** Continue adding research and demonstration labs to the network.

**Classrooms and Computer Labs**

The majority of the classrooms have network connectivity. Through the standard network connection, faculty, students, and staff have access to the commodity Internet, Internet2, electronic library resources, and campus network resources. Some academic classroom buildings have older Category 3 cabling which may limit network connectivity. In many of these cases these classrooms have additional network access available through multiple wireless access points.

**Objective 17:** Provide Internet and Internet2 connectivity in each classroom.

**Objective 18:** Ensure there is an operational LCD projector in each classroom.

**Objective 19:** Provide wireless access through multiple access points in each classroom.

**Objective 20:** Ensure sufficient switched capacity in each classroom to allow portable videoconferencing

**Wireless**

Wireless network service is currently available in many of the academic and student support buildings. Facilities currently served with wireless access are listed below.
<table>
<thead>
<tr>
<th>Building</th>
<th>Area of Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arts and Technology Center</td>
<td>Entire Building</td>
</tr>
<tr>
<td>Carver Hall</td>
<td>Entire Building</td>
</tr>
<tr>
<td>Community Center</td>
<td>Entire Building</td>
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<tr>
<td>Ella Fitzgerald Performing Arts Center</td>
<td>Entire Building</td>
</tr>
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<td>Frederick Douglass Library</td>
<td>Entire Building</td>
</tr>
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<td>Entire Building and Outside Area Towards Kiah Hall</td>
</tr>
<tr>
<td>Hytche Center</td>
<td>Ticket Booth</td>
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<td>J.T. Williams</td>
<td>Entire Building</td>
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<td>Kiah Hall</td>
<td>Entire Building and Outside Area Towards Henson Center</td>
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<td>Entire Building</td>
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<tr>
<td>Wilson Hall</td>
<td>Entire Building</td>
</tr>
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</table>

**Objective 21:** Expand wireless coverage across the campus.

**Objective 22:** Establish 24-hour technology resource center in Waters Hall.

**TELECOMMUNICATIONS**

The university currently maintains two PBX’s. One is located in the J.T. Williams Hall Telecommunications room and the other is in the basement of University Terrace. The manhole and conduit system in which the copper and fiber connections for campus phones is losing its integrity. The manholes flood on a regular basis which results in compromised splice cases and deteriorating phone lines. While preventative maintenance is routinely performed on these lines (e.g., replacing splice cases, replacing copper cables), a more drastic upgrade is required in order to completely fix the problems. An engineering study of the campus phone lines showed that in some cables, as many as 60% of the lines were no longer functional.

**UTILITY MASTER PLAN UPGRADE**

Capital funding has already been approved for a comprehensive Utility Master Plan Upgrade. Specific initiatives listed in this upgrade include:

- Installing automatic pumps in manholes
- Relocating splice cases so they are no longer in manholes
- Implementing a plan for redundant service

**PBX**

The phone switch in J.T. Williams was recently upgraded to an NEC 2400 IPX. In addition, the phone switch located in University Terrace has the same capabilities. The two
switches have been connected via a fusion link that allows remote management of both switches. The phones switches allow VoIP traffic with appropriate cards and configuration. The PBX’s can also be connected to the campus network to allow wireless VoIP connectivity.

Objective 23: Implement a phone system design that incorporates redundancy.

PHONE LINES
The university must continue to insist that Verizon and AT&T verify the integrity of their lines that service the campus. There are specific problems that have been known to exist for over 7 years that still have not been resolved. In May 2003, Verizon network engineers and Verizon Enterprise Service engineers (PBX) worked to resolve issues on the campus. At that time 10 lines on the campus and 12 additional lines in the Central Office were found to be faulty (all under Verizon’s responsibility). In June 2003, the Verizon feed to the campus was rerouted and new fiber installed when the new SESS building required moving some of the campus conduit. Even after these intrusive tests, there still seem to be issues that have not been resolved, but a comprehensive evaluation cannot be completed until the students return in the Fall of 2003. Examples of problems that are routinely reported include:

- Fast busy signals for local and long distance calls
- Dropped calls
- Dead Air on either the calling or receiving end
- Static in the lines

While some occurrences of these issues may be due to defective cabling on the campus or to the need to increase capacity, there is evidence that indicates a majority of issues result from the programming of the PBX’s, or are a result of poor communication between the PBX and the Central Office. A request to upgrade the network feeds from T1’s to PRI’s has been submitted to the local service vendor.

Objective 24: Vendors must be held accountable for resolving ongoing problems with phone service.

Objective 25: Line testing and PBX tests must continue until the problems are resolved.

Objective 26: Campus phone feeds should be upgraded to PRI service.

CABLE MANAGEMENT SYSTEM
UMES must have a cable management system to keep track of the existing fiber and copper pairs. An effective CMS will increase the efficiency of phone and data service repairs and streamline troubleshooting efforts. As the campus continues to increase in size, effective management of copper and fiber assets will become increasingly more important.

Objective 27: Implement a Cable Management System.

CALL ACCOUNTING SYSTEM
National studies indicate that institutions can reduce their telephone expenditures by 10% to 30% by implementing a Call Accounting System. UMES currently has a call accounting system that requires students to prepay for phone services. The same system has features
that allow the university to bill faculty and staff calls to specific account numbers. Activating the Call Accounting system provides automatic monitoring of faculty and staff phone lines and will protect the university from phone abuse and toll fraud.

**Objective 28:** Activate the Call Accounting System for Faculty and Staff.

**CABLE AND SATELLITE**

The campus maintains its own CATV system. The feed currently originates at the Radio Station and is pushed throughout the campus from there. The campus cable uses the same manhole and conduit system as the telephone and data networks. To that end, it suffers from the same issues of flooded manholes and conduits. Amplifiers, splice cases, and directional couplers that are located in manholes have been routinely failing on each leg of the CATV system.

**SATELLITE DOWNLINK**

There are two satellite dishes that currently have decoders that feed channels into the campus CATV. These channels can also be redirected over the campus data network to reach those classrooms that do not have CATV access. Since a majority of the classrooms and all residence halls except Hawks Landing are currently on the campus CATV system, students in classrooms and residence halls have access to material that may be inserted on the campus network from satellite feeds.

**CHANNEL INSERTION**

In addition to the satellite feeds, there are also a number of modulators that allow insertion of channels that may include video from academic classes. Since a majority of the classrooms and all residence halls except Hawks Landing are currently on the campus CATV system, students in classrooms and residence halls have access to material that may be inserted on the campus network from on campus sites (e.g., Wilson Hall Teaching Lab).

**Objective 29:** Upgrade CATV service as a component of the Utilities Master Plan Upgrade.

**Objective 30:** Perform a cost comparison between using cable provider vs. satellite feed at the head end.

**TECHNOLOGY IN THE CLASSROOM**

UMES is committed to providing adequate access to technology in the classroom. Specific initiatives to enhance faculty and student interaction are listed below:

- Each fulltime faculty member has been provided a laptop, docking station, monitor and external keyboard and mouse.
- Each SMART classroom has an LCD projector, a docking station, and network access (campus LAN, Internet, and Internet2)
- A phone is located in each SMART classroom to facilitate calls for assistance when technology fails or when help is needed.
- H.323 compliant videoconferencing can be routed to all classrooms that have a network connection.
• CATV is available in many locations and allows satellite feeds to be routed directly to the classroom.
• Satellite feed can also be pushed over the campus data network to classrooms and labs that do not have CATV access.
• WebCT is the standard platform for web-assisted and web-based classes.
• The University subsidizes student software purchases by paying for the student licenses through the MEEC agreement. Students have access to Microsoft software at the price of the media (~$5 per application)
• Faculty and students have access to web-based Microsoft Outlook email, calendar, and contact resources.
• The Board of Regents Digital Divide Initiative provides 225 laptops to students that otherwise would not be able to afford them.
• A portal that provides access to student data is being implemented.

Objective 31: Conduct a feasibility study of Desktop, Laptop, Tablet, and PDA technologies to evaluate the feasibility of their use at UMES.
Objective 32: Update the plan for maintaining and refreshing technology in classrooms.

IT STAFFING
It is important to staff the Office of Information Technology at levels that will allow efficient management of the resources and to proactively plan facility upgrades. The alternative is to have haphazard services that are maintained in a crisis management mode.

Examples of activities that require the expansion of Information Technology services include:
• increasing the number of students, faculty, and staff
• increasing the number of academic and research buildings
• increasing the number of residence halls; increasing the wireless coverage
• increasing the number of videoconferencing access points
• increasing the number of faculty conducting web-based/web-assisted courses.

Objective 33: Information Technology will be staffed at a level to provide adequate service and response time for users.
Objective 34: Sufficient IT Staff to provide technical assistance/maintain SMART classrooms is required.
Objective 35: Additional staff to support the growing requirement for training activities is required.

VIDEO SERVICES
Studio IV is located in the Performing Arts Center. This facility provides access to state-of-the-art equipment including digital non-linear editing and digital video recorders.
DIGITAL EDITING

There are two non-linear digital editing stations available for campus use. One is located in Studio IV in the Performing Arts Center and the other is located in the Theater Control Room in the Student Services Center. These sites are available for:

- taping content for web-assisted/web-based courses
- producing videotapes
- producing live and taped broadcasts

The facilities can receive video input from a variety of sources including mini-DV, Beta, VHS, SVHS, and online formats. In addition to the non-linear editing, the resources also provide the ability to add transitions, wipes, graphics, music, voice-overs, and other standard editing tools to video. Resulting video can be produced in a variety of formats similar to those used for input.

Examples of taped events that have been edited and saved to tapes include:

- Graduation
- Convocations
- Guest speakers (with prior written permission)
- Performances (with prior written permission)
- Carnival/Gala
- Basketball Games and Volleyball Matches

TAPED BROADCASTS

The university has a number of portable digital and analog video cameras that are used to gather video footage that is edited to create material that is later broadcast on the campus CATV or via regional cable providers. Examples of current projects that result in taped broadcasts include the following:

- *Land of Books* (Annual tapings during the summer)
- *Yes...UMES!!!* (Weekly tapings and broadcasts)
- *Abriendo Puertas* (Quarterly tapings)
- *Shore Vitality* (Pilot phase)

LIVE BROADCASTS

Live broadcasts can originate from the fixed studios (Studio IV or SSC) or from the portable video cameras. Video feed from the video cameras can be ported over the campus data network to Studio IV where it can transmitted to the regional cable provider or can be patched into the university’s CATV for on-campus delivery.

**Campus Network**

Examples of events that are generally broadcast live on the campus network include:

- Speakers
- Graduation and convocations (and transmission to secondary sites)
- Sporting events (e.g., Volleyball matches)
Regional Cable

Studio IV is equipped with a teleprompter, wireless microphones, blue-screen, and portable set design. These tools facilitate live broadcasts that are transmitted via fiber link to the regional cable provider. Current shows that are produced in this manner are as follows:

- *TV Tutors Live!* (broadcast live Monday through Thursday during the school year)

CALL-IN COMPONENT

Currently a bank of 6 phones that can be expanded to 12 phones is available. A Gentner System is in place that allows callers to be patched into the studio as part of a live or taped broadcast. This capability can be used as part of educational broadcasts, live interviews, or phone-a-thons. An example of this feature is evident in the *TV Tutors Live!* Project.

WEB SERVICES

The first three levels of the UMES website are maintained centrally by the Office of Information Technology in conjunction with the Office of Institutional Advancement to provide a common look and feel for the site. The UMES website has been ranked as one of the Top 10 HBCU websites for each of the past 3 years by the Archimedes Project based at Howard University. This ranking assesses the types and availability of information, ease of use and layout, and the depth of online resources that are available (e.g., application, registration, financial aid, student accounts). The factors that limited a higher ranking of the UMES site centered on student access to registration, grades, and financial information via online mechanisms. Each of these has been addressed with the implementation of PeopleSoft.

UMES currently provides 100% of the online services that were listed in the 2002 National Survey of Information Technology in Higher Education. The list is as follows:

- Undergraduate and admissions application
- Financial aid application
- Current course catalog
- Program/major/degree requirements
- Course Registration
- Course add/drop options
- E-commerce (fee payment)
- Online courses
- Library/card catalog
- Interlibrary loan services
- Journals & reference sources
- Course reserves
- Student transcripts
- IT support resources
- IT training/tutorials
- Instructional software
DEPARTMENTAL WEB PAGES

Departmental web pages are generally administered by the Information Technology staff. Content must be provided by the departments. Departments are ultimately responsible for the accuracy of content on their pages. Pages specific to projects and other higher level organizational initiatives (including grant-funded projects) will be created if the content is provided to the IT Department in a timely manner. In some cases, departments are able to maintain their web pages if an approved on-campus developer is identified.

Objective 36: Implement a Content Management System to make web space management more efficient.

FACULTY WEB PAGES

Faculty also have access to personal web pages. Generally, documents that are stored on their “P:” drive are automatically added to their web pages. Faculty must sign the campus Acceptable Use Policies and a statement acknowledging that they understand the Digital Millennium Act and that they are directly accountable for the content they publish online before using their accounts.

Objective 37: Additional training is needed to help faculty create and use websites.

STUDENT PAGES

Students have access to space for creating web pages. This space is available after students have registered with the IT Department. Registration includes signing the Acceptable Use Policies and acknowledging that they are ultimately accountable for content they publish because UMES has met requirements of the Digital Millennium Act.

Objective 38: Student training for web publishing.

TRAINING

As the level and sophistication of the resources that are available to the students, faculty, and staff increases, so must the training efforts to prepare each of these groups for using the resources.

FACULTY AND STAFF TECHNOLOGY TRAINING

Faculty technology training is available through the Faculty Development Institute (FDI). The FDI is a joint faculty training initiative between UMES, Salisbury University, Washington College, Chesapeake College and WorWic Community College. External funding for this initiative has been received from the Maryland Higher Education Commission, Verizon, and US Department of Education Title III funds.
STUDENT TRAINING

Student technology training is available as core requirement courses within a number of academic majors. In addition, the Board of Regents has instituted a Technology Fluency requirement for all academic classes. In addition to formal instruction in academic classes, students receive assistance in computer labs, from training programs in the library, and from student liaisons that have been identified as part of the Digital Divide Initiative. Specifically, students can receive assistance in:

- Webpage development
- Productivity software (e.g., Word, Excel, Access)
- Course-specific software
- Computer usage
- Network usage

IT STAFF TRAINING

In order to remain current on security concerns, copyright issues, bandwidth management, and general trends in technology management, the Information Technology staff must participate in regular training sessions. These training sessions may include attending trade shows, formal workshops, or pursuing certifications. In many cases, professional certifications are becoming a requirement for improving and maintaining the business processes that have been adopted by the university. For example, a requirement of being a Gateway Self-Maintaining Campus is that at least two staff members must be A+ Certified.

Objective 39: Use funding from warranty repairs and refunds for IT Staff training. This will ensure that certifications are current and provide additional incentives for staff.

DISTANCE EDUCATION

The university is currently set up to accommodate three types of distance education delivery: on-site, web-based, and videoconferencing.

ON-SITE

A number of the academic departments provide on-site distance education course offerings. On-site instruction requires a faculty member to be physically present to teach course material to students at a facility that is not physically located at the main campus. These sites currently include Shady Grove, Baltimore, Chesapeake College, and Eastern Correctional Institution. IT support at these facilities is limited to providing a computer for fulltime faculty, establishing an email account, and providing access to the campus student information system. Access to the campus network is available through a VPN client.

Objective 40: Maintain telecommunications capability for off-site faculty to access campus network resources.

WEB-BASED/WEB-ASSISTED COURSES

UMES is standardized on WebCT for its online distance education platform. The WebCT server is managed by the Department of English & Modern Languages. There are a number
of faculty members creating content for web-assisted and web-based courses using WebCT. Video clips can be produced and edited in Studio IV in the Performing Arts Center.

**Objective 41: Maintain an environment for web-assisted and web-based course content.**

**VIDEOCONFERENCING**

Videoconferencing equipment has been standardized on Polycom H.323 compliant systems, including classroom and desktop versions. Courses that are broadcast between University System of Maryland campuses are transmitted through the dedicated UMATS network. This ensures Quality of Service and efficient transmission of the video-based courses. Many of the undergraduate engineering courses from UMCP and some doctoral classes for the MEES program routinely use the Polycom videoconferencing infrastructure.

Videoconferencing facilities exist in the following locations:

- Frederick Douglass Library
- Tanner Hall
- Carver Hall
- Henson Center
- Chesapeake College Higher Education Center

**CABLE TELEVISION**

There are a few channels that are available to broadcast courses, seminars, and workshops over the campus cable system. In addition, the university has a direct fiber link to the head end of the incumbent regional cable provider. This allows the opportunity to offer courses to the lower five counties of Maryland’s Eastern Shore. In addition, the Studio IV facility has a bank of phones that allow a call-in component to be implemented in conjunction with a live or taped broadcast.

**Objective 42: Provide opportunities for distance education using partnerships with the regional cable television provider.**

**SECURITY**

Information technology security is becoming increasingly more important as resources are provided online and made available through wireless connectivity. To this end, policies and procedures must be maintained for

- Wireless access points
- Firewalls
- VPN access
- Routers
- Network Address Translation (NAT)
- Subnetwork separations
- Virus and Hacker Protection
Tape Backup

Particular attention must be devoted to securing the integrity of the Administrative Computing systems.

**Objective 43:** Maintain a current IT Security policy.

**EVALUATION**

The Information Technology Department performs routine evaluations to monitor progress toward goals and to determine end-user satisfaction. The following tools are currently used:

- K.C. Green Annual Campus Computing Survey
- Annual Student User Satisfaction Survey
- Annual Student Computer Ownership Survey
- Weekly review of IT Staff Help Desk completions
- Annual review of computer levels
- Quantifying faculty, staff, and student email traffic
- Quantifying faculty, student, and course websites
- Webtrends Data analysis of campus websites
- Monitoring frequency of student account usage
- Monitoring computer lab usage
- Monitoring network traffic usage levels

**Objective 44:** Revise tools used for evaluating service and monitoring resource usage.