Higher education focuses on the bottom line
Universities were once cloistered institutions, insulated from the pressures and pace of the real world. No more. Today, higher education is a business like all businesses focused on the bottom line.

To compete successfully, universities must develop cost-effective solutions to provide better service to their “customers.” They must increase administrative efficiency and staff productivity. And they must extend their programs and services beyond the traditional campus into the communities they wish to serve.

Florida International University (FIU) is one of the first higher education institutions to recognize this trend and to employ an ambitious e-business strategy to gain a competitive advantage. FIU is the largest public university in South Florida with more than 30,000 students from across the United States and 110 foreign countries.

"...higher education must take the opportunity to apply the benefits of the information age to society."
Dr. Art Gloster, Vice Provost and CIO of FIU

A multicampus institution, FIU offers nearly 250 baccalaureate, masters and doctoral degree programs through its 15 colleges and schools. It also boasts a new, state-of-the-art library, a museum—The Wolfsonian—and numerous collections of audio and video materials used by professors to bring courses to life.

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Reengineering the delivery of education
Determined to position itself for success, FIU decided to apply leading-edge networking technology to reengineer the way it delivers its educational product.

According to Dr. Art Gloster, Vice Provost and CIO of FIU, “The impetus for change stems from four factors. First, higher education is being subjected to the same demands for cost-effectiveness, efficiency and productivity that have caused major restructuring in other sectors of society. Second, it is coming under increased scrutiny from both funding agencies and its customers to deliver a higher quality, more relevant product. Third, it must better meet the needs of a student population whose characteristics are much different than a decade ago. And finally, higher education must take the opportunity to apply the benefits of the information age to society.”

Today’s students, he points out, are very different than those in the past. They are typically over 21, attending school part-time while working a full-time job. They are also technically adept, culturally diverse and a product of the
media generation. These students want anytime, anywhere access to learning and services and expect technology to play a key role in providing this access. Moreover, they have no particular loyalty to educational institutions and will shop around for the most convenient and affordable deal.

With mounting competition from other universities, FIU decided to embark on an e-business initiative to create a virtual university in which students can register online, access educational materials and “attend classes” from remote locations. To achieve this goal, it turned to a unique partnership between IBM and TCI Network Solutions (TCI-NS).

**FIU turns to IBM and TCI-NS to bring courses and materials to its students**

“We needed to create and implement an infrastructure that would tie our multiple campuses and collections of reference and instructional materials together,” Gloster explained. “We wanted to provide online access to our library, and to the holdings in the Wolfsonian and various departments including art history, architecture and music, and to offer distance learning to the increasing numbers of students who are ‘placebound’ due to family and work restraints and cannot commute to campus to attend classes.” FLU also wanted to make it easier for faculty to access and assemble materials for classes—materials including text, still images, video and audio.

The answer for FIU was a network jointly designed and implemented by IBM and TCI-NS, using IBM ATM technology and TCI-NS wide area networking and management services.

FIU began by creating a digital library application to enable students and faculty to access digitized library holdings from each of FIU’s campuses, and eventually, from any location at all. IBM and TCI-NS implemented a multimedia-capable infrastructure with ATM workstations and a 155Mbps OC3 ATM backbone to connect the library to the rest of the main campus. TCI-INS provided the wide area connectivity to link FIU’S main campus with its north campus some 35 miles away and assumed management of the entire network.

FIU has also begun using this network to broadcast live classroom lectures between campuses, as well as for videoconferencing and stored video playback to the desktop.

**IBM and TCI partner to deliver industry-leading networking solutions**

“The IBM/TCL-NS partnership is uniquely designed to deliver advanced and comprehensive wide area networking solutions,” says Jack Baney, IBM Director of Global Service Provider Sales.

IBM’s Networking Hardware Division (NHD) develops and manufactures industry-leading networking technologies and products, providing global end-to-end solutions for Token-Ring, Ethernet, Gigabit Ethernet, ATM, IP and SNA networks. NHD has helped thousands of companies around the world achieve their business and networking objectives.

**TCI Network Solutions as an IBM network provider**

TCI-NS, is a non-regulated, non-tariffed Private Carriage provider of private line service. TCI-NS uses the bandwidth of TCL Cable, and that of other providers with whom it has cooperative agreements, to provide complete, high bandwidth wide area networking solutions. Because it is non-regulated, and because of its extensive, existing cable infrastructure, it can offer customers much lower cost per bit.

But TCL-NS does more than sell bandwidth, explains Jim Cunningham, TCI-NS Vice President. “In partnership with IBM, TCI-NS functions as a systems integrator, assisting companies in designing, implementing and managing integrated networks. The bottom line is tremendous value for customers—high-bandwidth, managed networks at prices comparable to traditional narrow band service.
“The IBM/TCI-NS partnership is uniquely designed to deliver advanced and comprehensive wide area networking solutions.”

Jack Baney IBM Director of Global Service Provider Sales

IBM ATM products at heart of FIU network
At the heart of FIU’s network are IBM’s award-winning ATM products. “IBM ATM technologies enable organizations to address their requirements for increased backbone bandwidth, multiprotocol support and service guarantees,” says Cunningham. “They also allow businesses to reduce the cost and complexity of supporting multiple enterprise networks.”
Among the award-winning IBM ATM solutions used at FIU are:

IBM 8265 Nways ATM Switch
The 8265 Nways ATM Switch is IBM’s next-generation ATM switching technology for high-speed switched backbone networks. It is ideal for organizations requiring a switched backbone based on OC3 and OC 12 ATM switching for concentration of campus LANs, high-speed wide-area ATM connections and native ATM attachment of high-speed servers. The 8265 offers industry-leading bandwidth, price/performance and standards-based ATM functionality. It is robust, reliable and stable, and uses IBM’S Prizma Chip architecture to deliver switching capacity up to 12.8 Gbps on a 25 Gbps ATM backplane. This will soon expand to 50 Gbps.

IBM 2220 Nways BroadBand Switch
The 2220 Nways BroadBand Switch is designed for high-bandwidth transport networks with both constant and bursty traffic. It integrates voice, batch, real-time and image applications while providing cost savings and quality of service. Using the 2220 to combine several protocols in the same adapter can reduce the cost of supporting multiple protocols. Each line interface can support a different protocol such as Frame Relay, voice, HDLC, circuit emulation, ISDN or Q.SIG. It offers a guaranteed level of service for time-sensitive traffic such as voice and video, and maximizes bandwidth utilization for effective transport of large, less time-sensitive data and image traffic.

IBM 8210 Nways Multiprotocol Switched Services (MSS) Server
The 8210 Nways MSS Server is a highly reliable and scalable multiprotocol networking solution for the ATM environment. The MSS Server is intended for customers who are ready to update their current campus infrastructures or to prepare for new applications, such as voice or video, with quality of service requirements. By attaching the 8210 to a campus ATM switch, an organization can create a high-performance, multiprotocol backbone to maximize the effectiveness of its existing networks while preparing for the demands of future applications. It also provides a smooth migration path to ATM by enabling legacy networking hardware and software to take advantage of high-speed ATM backbones. This allows businesses to preserve their current networking infrastructure while realizing the many benefits of ATM. The 8210 is designed to exploit ATM’S capabilities and extend them to devices connected by traditional LANs and WANs.

ATM infrastructure ensures continued innovation and success
With this new infrastructure in place, Gloster envisions additional innovations:

• The consolidation of the university’s multiple voice, data, security and other networks into a single ATM network, thus reducing cost and complexity

• Implementation of a single smart card to manage access to university facilities and services

• Web access to the network, enabling distance learning well beyond Florida and the United States to the Caribbean and Latin America, and
• Enhanced customer self-service for registration, student advising, access to transcripts and other student records.

Because of its native support for switched architecture and its ability to support multiple data types and protocols, Gloster plans to deploy ATM wherever possible around the university. He also expects the university to realize significant cost savings thanks to the LBM/TCI-NS partnership. Already, FIU is getting their wide area 155 Mbps wide area connection for the price they were paying for 10 Mbps.

“In a very short time, we’ve had notable successes in achieving our goals,” says Gloster. “But we’re in a very challenging, competitive business, and we cant waste any time in getting prepared for 20012’ Gloster is fond of recalling that it took 10 years to get the overhead projector from the bowling alley to the classroom. His e-business vision for the university promises to keep FIU ahead of the competition. And he is determined to continue working with IBM and TCI-NS to accelerate the adoption of cutting edge technology like ATM to ensure FIU’s continued success.

**For more information**
To find out how IBM can help you meet your networking and e-business needs, visit our Web site at:
www.ibm.com/networking