



## Converged Network Provides Best-in-Class Solution for Houston Community College

### About Houston Community College

Houston Community College (HCC) is the fourth-largest community college in the U.S. and the No. 1 community college in the country for international students. Since its opening in 1971, HCC has provided more than 1.3 million students with the essential tools for success in an increasingly international and technological society. HCC comprises six area colleges – Central College, Northeast College, Northwest College, Southwest College, Southeast College and Coleman College of Health Sciences – on twenty-one campuses spread throughout Houston and surrounding communities.

### Situation

Connecting all of HCC's locations became increasingly difficult as technology was infused into the curriculum, enrollment grew and support services expanded. Because each college operates autonomously, instructional technology decisions were made independently of administrative technology, which resulted in an unwieldy assortment of equipment, applications and services competing for bandwidth availability. Compounding the problem, the wide area network was a star topology consisting of OC3, T1, DS3 and ATM connections, making it difficult to scale to each college's needs and for IT staff to support the infrastructure. The end result was that faculty, staff and students complained about latency and being dropped from the network due to insufficient bandwidth to support client-server and web-based applications that managed course content, room scheduling, finance, student services and other vital college functions.

### Solution

After considering several network options, Houston Community College opted for AT&T GigaMAN® service, a fiber-optic, dedicated point-to-point gigabit Ethernet service that connects all of the college's locations in a mesh topology. This solution supplies all the bandwidth that the college needs to execute advanced educational applications and scales easily to support the college's continuing growth. Network management is vastly simplified, as HCC can now combine voice, data and video services on this single unified platform. In addition, the solution's redundant connectivity vastly improves the college's business continuity and disaster recovery capabilities.

### Building a Community's Success

Community colleges are the largest and fastest-growing sector of U.S. higher education, enrolling close to half of all U.S. undergraduates. Houston Community College, one of 1,200 U.S. community colleges, is on a mission to become "essential to its community's success by being the most relevant community college in the country, and the opportunity institution for every student it serves."

Houston Community College enrolls more than 55,000 students each semester and anticipates an annual growth rate of about five percent. The college's Vice Chancellor of Information Technology/CIO, William Carter, notes that community colleges are the first choice for many students and that community colleges often thrive in hard economic times. "People depend on community colleges to provide valuable training on demand as they upgrade their skills and change careers. We must have the technology in place to handle both their immediate and long-term needs or we are not serving our community."

### Houston Community College Facts

- **Business Needs**  
Enabling infrastructure to support online education, course management, scheduling and other vital college functions
- **Networking Solution**  
Point-to-point dedicated Ethernet network supports the bandwidth needs of all campuses from a central location
- **Business Value**  
Improved network performance and reliability, decreased maintenance costs
- **Industry Focus**  
Higher education
- **Size**  
55,000+ students on eight campuses



“Larger than the University of Texas at Austin and the University of Houston, Houston Community College has the potential to become the largest community college in the country as well as the best two-year educational institution in the state,” Carter said. Adding to HCC’s attractiveness is the area’s quality of life. Houston was recently ranked by *Kiplinger’s Personal Finance* magazine as the top U.S. city in which to live, work and play.

Academic programs in the fine arts and humanities, math and natural sciences, and the social and behavioral sciences allow students to earn two-year associate degrees transferable to any Texas public 2-year or 4-year institution. HCC has 26 exemplary workforce programs, the most of any Texas community college, that focus on practical skills, training students for jobs in fields such as accounting, information technology, public safety and emergency medical services. The college also plays a major role in economic development and community-building, offering corporate training and continuing education classes, and supports life-long learning with non-credit courses, workshops, seminars, conferences and institutes.

### A Mission to Support Teaching and Learning

Managing an institution the size of Houston Community College requires advanced enterprise software. Currently, HCC uses Vignette® to manage web content and services, PeopleSoft® to manage finance, human resources and student systems, and Microsoft® Exchange for faculty, staff and student email, along with specialized applications designed to support educational institutions.

Blackboard Content System™ gives HCC faculty and students a secure environment in which to create and share digital content. Faculty can post syllabi, assignments and tests in Blackboard, which is hosted offsite and delivered as an ASP model by the Blackboard Corporation. The ASP model serves as one of the components of HCC’s disaster recovery model, Carter said, and enables more than 10,000 HCC students from around the world to take online courses each semester. The college uses other cutting-edge applications to manage and handle room assignments and perform dozens of other essential functions. Although the programs were powerful, limited bandwidth sometimes made it difficult to take full advantage of them.

“People at the colleges or remote campuses often had trouble accessing and maintaining connectivity to the systems,” Carter said. “The network bandwidth was constraining their ability to finish their work, and some reached the point of frustration where they either stopped using the systems or created shadow systems so that they could do their job.” Instead of being an enabler for the college, the network was almost an impediment for users at certain locations.

Carter’s first priority as the college’s Vice Chancellor of Information Technology in 2006 was to create an infrastructure up to the challenges of connecting the growing institution. “I kept hearing complaints about bandwidth,” he said. “Our mission as a department is to support teaching and learning, but there was not an adequate network structure to support our users the way we needed to support them.”

The IT team considered a number of different solutions, including TDM service and dark fiber, but determined that a dedicated point-to-point GigaMAN network would best meet the demands of the college constituents. “Attaining the Board of Trustee’s support for the initiative was an important early first step.”

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– William Carter, CIO, Houston Community College

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IT officials shared their research on network options with the Board of Trustees, who approved the department’s recommendation to build a GigaMAN network. “They knew that if we wanted to embrace high-bandwidth applications like streaming media, video conferencing and Voice over IP the college’s wide area network would have to be redesigned and upgraded,” Carter said. “They have been extremely supportive throughout the upgrade.”

### Bandwidth Flowing Like Water

Technology long ago moved from a convenience to an absolute necessity in most organizations. “Connectivity is as important as electricity and running water. Without it, an institution can not serve its community and maintain vital operations,” Carter said. “Creating an environment that is flexible enough to change as needs change was our only logical next step. With the equipment that we purchased, the contract we signed and the capabilities that AT&T provides, we take that next step of being essential, relevant and the institution of opportunity for the Houston area and beyond.”

HCC’s network today supports more than 55,000 student users and 5,000 faculty and staff. Complaints about latency and outages are rare thanks to the network’s “substantial” reliability, said Annette Hearn, the college’s Director of Systems Support. “We receive more customer respect now that we are able to provide improved services,” she said. “People see and feel the changes we have made.”

Network uptime has increased from the 80s to about 99 percent, resulting in dramatic increases in productivity and decreases in overtime pay for IT staff called out to resolve network problems after hours, Hearn said. Converging voice, data and video over the same network has simplified network management, she said, and enabled the college to save money by adding Voice over IP services.

Evelyn Josey, Director of Customer Support, said the GigaMAN service gives Houston Community College a way to provide great services to all users, no matter where within the HCC system they’re located. “Today we have a level playing field that will provide advantages to all our students, faculty and staff,” she said.

### Maintaining Network Integrity

Vice Chancellor William Carter attributes the strength of the HCC network to its mesh design, which provides redundant connections between locations, unlike the ring topology he supported at a former job. "When two connections were broken on the ring, our ability to communicate with all sites was impaired. This didn't happen often but when it did, the problem took days to fix" he said. "On HCC's network, two connections can break and we are still able to provide services and communicate continually with our remote sites."

The redundancy of its mesh network has worked well for HCC. "Based on what I've seen from community colleges that I have visited and the people that I have talked to, I think that this is a premier topology for a large multi-campus metropolitan college such as Houston Community College."

College officials count on the enhanced security and business continuity they get from a converged network; GigaMAN provides a dedicated line for disaster recovery. "Because of the tropical storms and hurricanes we get in Houston, we wanted to go with a vendor

like AT&T that has protected underground infrastructure and provides disaster recovery capabilities," Carter said. "It's not just our team that's maintaining the integrity of the network. We have confidence that AT&T is going to keep our connections running."

The AT&T brand is important to Houston Community College, as is the expertise of AT&T's project professionals. "We didn't want to go with 'Ben's Network Company,'" Carter said. "We wanted to go with a leader in the industry." He said he would recommend AT&T GigaMAN to colleagues "looking for a good, redundant solution."

Joseph DiFlavio, HCC Project Manager, said the AT&T team did a great job. "They were very accommodating, and I think we worked well as a team to meet project deadlines. AT&T has been supportive in this process from beginning to end."

Carter said he is proud of the network and of what his IT staff has accomplished. "I think that the network has allowed us to really show our resilience," he said. "It helps us sustain our image and support our goals and mission as a department to become a true asset to the college."

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