Laying the Foundation

for the Future of Higher Education

By Greg Niemiera

The State of Connecticut is well known for its information technology infrastructure initiatives. Overseeing the State's countless projects is the Department of Information Technology (DOIT). Among this 400-person department's many responsibilities are the Executive Branch of State Government, The Governor's office, Department of Motor Vehicles, Labor, and Corrections, among others. DOIT also oversees all other telecommunications from PBX operations to cell phones and pagers.

Currently undergoing the most advanced transformation is Manchester Community College, one of 11 in the state. The MCC installation is the largest Category 6 installation in the state, and represents the highest and best use of technology infrastructure available in a public university available today.

The master plan was finished in 1993 and architects were hired in 1995. In the latter nineties, a new Division of Information Resources and Technology (DIRT) was proposed and formed by the State, headed by a Dean of Technology, Tom White-Hasler. Endowed with support from Paul Nicholas and the State DOIT, the critical combination of factors was now in place with regards to funding and visibility. It was a rare and timely opportunity – which coincided with "UCONN2000", a ten-year, $1 billion appropriation to renew, rebuild and enhance the University of Connecticut.

Starting the Project

MCC was reorganized around educational technologies, particularly in the classrooms, as input from faculty took priority. Not finding any existing off-the-shelf configurations to their liking, MCC devised its own unique teacher's station and classroom standards, which became the model for installation in twenty classrooms during Phase I, and forty more in Phase II. The challenge was to plan and implement a wave of development that would leapfrog both conventional wisdom and existing technology into a timeless environment that would satisfy applications as yet unavailable. MCC would soon become the beta site for Hewlett Packard's (HP) latest network server technology.

In 1999, at this early stage of the process, very few cable and component companies were prepared to legally certify their products to Cat 6 standards. Still fewer met MCC's aggressive stocking requirements. The project would require half a million feet of cable in by the end of Phase I, possibly totaling 1.2 million feet by the completion of Phase II.

Early Category 6 Leadership

"At that time, the only component company who would commit to the proposed Category 6 standards prior to the start of Phase I claim was The Siemon Company, of Watertown, Connecticut," said Rick Moody, statewide

A typical grounding buss bar used throughout the campus.

Telecommunications Project Manager for Sonitrol, one of the frontrunners of the effort. Sonitrol manages a large number of other projects as part of its contract with the State of Connecticut DOIT. The Cat 6 standard was ratified by the TIA/EIA at the start of Phase II in the summer of 2002. Prior to vendor selection, test drops were set up identical to the upcoming installation. A typical field test analyzer was used to compare differences, if any, in levels of headroom among component and cabling vendor combinations. Siemon components and Mohawk cabling were selected for the job. Figuring into the decision process were ease of use and convenience of labeling to minimize installation costs and reduce scrap. Additional comfort factors included any extended end-to-end solution warranties.

Sonitrol's installation technicians at MCC appreciated both economic and ergonomic details such as its reverse sequential printing on the AdvanceNet cable jackets, along with date of manufacture and lot number. Footage markers indicated the exact amount of cable remaining in each box. Elimination of spontaneous math errors not only reduced scrap, but also enhanced installers' productivity. "Toward the end of a job, we can immediately pick out a box for a 200-foot run without having to second-guess manual calculations," said Reardon.

Ensuring Future Performance

MCC's project team sought the ultimate productivity solution, leveraging state-of-the-art technology for its greatest foreseeable performance advantages without incurring any additional costs. Efforts are already under way for 1000BASE-T applications to run a gigabit of bandwidth over Cat 6 cable.

MCC will be able to use such high-bandwidth multimedia applications in the future. Similar cabling philosophies also dominate other installations of Connecticut's Department of Higher Education, which currently support over 60,000 UCONN and State University students.

Preventing Future Labor Costs

Unlike technology, the relative cost of labor always rises. "We wanted to minimize and eliminate all future maintenance, moves and changes," said Moody. High on the priority list of future cost reduction was the accuracy of installation tracking, labeling and documentation. Whether maintained by State or by Sonitrol personnel, any future labor costs that could be eliminated were capital costs well spent today.

All work performed by certified installers were guaranteed with warranties against component and workmanship failures for 20 years. To further improve network reliability while reducing testing and ordinary maintenance time, Siemon 110 Disconnect Blocks are standard equipment in every wiring room, as opposed to a generic 110. "MCC's future line technicians will have a great deal more flexibility and efficiency for testing," said Moody.

"Wherever possible, we have translated future hours of expensive troubleshooting into uptime for an entire generation of education."

Time is Money

BICSI surveys have shown that technicians spend almost 75 percent of their time trying to figure out what goes where. Only 25 percent is spent actually performing the work. Discussions among Sonitrol, DOIT, MCC executives and Archi-Technology of Rochester, NY (subcontracted by Sonitrol) resulted in the adoption of Division 17 and TIA/606-A Standards for the MCC installation. Cabling and component suppliers had to demonstrate 606-A-compliant labeling conventions, which fit perfectly into the MCC documentation scheme.

"Every firestop and equipment rack was digitally photographed during construction and throughout the project. Every J-hook pathway, cable tray pathway, wall jack, conduit, patch cord, punch block and grounding wire were clearly labeled," said Pat Reardon, whose team terminated over 3,000 drops. These drops support over 1,500 devices, including 36 computer labs, each with up to 35 PCs running 100 Base-T to the desktop. But MCC pushed still further for immediate productivity. "Every drawing and minutes of meetings are updated weekly," said Moody. "Any active member can get information in real-time."

MCC is the currently state's biggest

Top view of the new MC in the Art, Science and Technology building at MCC.

Cat 6 installation. "The scope of this project is small compared to a University of Connecticut, with ten locations of different wiring architectures whose legacy documents are still scattered," said Nicholas, "but the State of Connecticut is keenly interested in applying statewide the standards defined and pioneered here at MCC." CBM

Greg Niemiera, a certified RCDD, is Technical Sales and Marketing Manager for Mohawk/CDT, and an occasional speaker on the BICSI circuit. He can be reached at 800-422-9661 or by E-mail at gregn@mohawk-cdt.com.