Three County Boards Collaborate On Smart+Connected Buildings

Smart+Connected Communities
Case Study

Executive Summary

- Cleveland County, North Carolina
- **Industry:** State and Local Government
- **Location:** Shelby, North Carolina
- **Number of Users:** Approximately 99,000 Residents

Challenge

- Foster sustainable economic growth
- Create educated local workforce to attract new employers
- Minimize building operational costs

Solution

- State-of-the-art facility and network shared by county economic development office, school district, and community college
- Cisco Physical Security solutions, Cisco Network Building Mediator, Cisco Unified Communications, and Cisco Digital Media Suite

Results

- Boosted county's appeal to convention planners and employers
- Created 21st century learning environment
- Decreased upfront and ongoing building systems costs (expected)

Cleveland County commissioners, school district, and community college took the Smart+Connected Communities approach.

Challenge

Home to about 99,000 residents, Cleveland County, North Carolina is located between two large metropolitan areas, Charlotte and Greenville/Spartanburg. The natural beauty of the nearby Blue Ridge Mountains and proximity to major highways make the county an attractive location for out-of-area employers looking to expand.

Like most local governments, Cleveland County has traditionally operated as a loose coalition of separate entities, each with its own projects and budgets. But when different entities share common goals, they can often achieve them sooner, with less expense, and with greater benefits to the community if they collaborate. This was Cleveland County's situation when the county board of commissioners began planning a new, state-of-the-art convention center as part of the master economic development plan. "To attract conventions, the county needed a building that could accommodate 1000 people in one space, with breakout rooms and advanced video technology like telepresence and digital signage," says Roger Holland, a native of Cleveland County and architect with Holland and Hamrick Architects.

The commissioners quickly realized that the convention facility could also support the mission of at least one other government entity, the county Economic Development office. More than 40 percent of the county workforce is involved in manufacturing. To create more diverse job opportunities to help retain new high school and college graduates, the county is actively recruiting new types of employers, especially data centers. Bringing potential employers to meet with economic development officers in a state-of-the-art building (with telepresence, digital signage, and web-based monitoring of energy consumption) demonstrates the county's innovative use of technology for an educated workforce, operational efficiency, and environmental sustainability.

To fund a building project as ambitious as the convention center, the Cleveland County Board of Commissioners needed financial partners. The schools and community college were natural choices because of their role in creating an educated workforce. "Employers strongly consider the quality of education, workforce skills, and quality of life when deciding where to locate," says Dr. Bruce Boyles, superintendent of Cleveland County Schools.

As it happened, Cleveland County Schools wanted a new site for the Early College High School program, which enrolls about 200 high school students, who receive a two-year associate's degree at the same time they graduate high school. Similarly, Cleveland Community College needed new space for continuing education classes designed to retrain the local labor force for 21st-century jobs. Classes include IT, healthcare, biotechnology, automation, and a Cisco Networking Academy that teaches students how to design, build, troubleshoot, and secure computer networks.

"This collaboration with the board of commissioners was an opportunity to have positive dialogue on a project to benefit the community at large. The Smart+Connected Communities approach created a new atmosphere of cooperation within government."

Dr. Bruce Boyles
Superintendent, Cleveland County Schools

Solution

The three boards (county commissioners, school district, and community college) agreed that they could gain economies of scale by sharing the funding, the facility, and the network infrastructure. They voted unanimously to fund the building, each contributing a third of the US $19 million budget. "A unanimous vote from any single board is remarkable, and from three boards is a testament to the very clear value of shared, connected real estate," says Holland.

The new LeGrand Center, scheduled to open in mid-2012, demonstrates the potential when multiple government entities collaborate to accomplish what no single entity could alone. "All three boards approached the state-of-the-art building project as something that would benefit the overall community, not just their own organization," Holland says.

Holland and Hamrick designed the modern 84,000-square-foot building, which is expected to receive Leadership in Energy and Environmental Design (LEED) Silver certification for environmental sustainability. The first floor of the LeGrand Center houses the Early College High School classroom and the community college continuing education department. The upper floor houses the Economic Development office and the conference center.

The architects engaged SmartCore, a local Cisco Premier Certified Partner, to design and implement the Cisco technologies. A reliable, high-performance IP network supports all voice, video, and data traffic flowing in the building. This traffic includes Cisco® Unified Communications voice traffic; text and graphics displayed on Cisco Digital Signs deployed throughout the building; video from Cisco Video Surveillance IP Cameras; and data from building systems such as lighting, heating, ventilation, and air conditioning (HVAC); and environmental sensors. "Open systems and converged networks have a lower total cost of ownership than proprietary systems and separate networks," says Will Winn, principal of SmartCore. "The Smart+Connected approach gives the county the flexibility to use the network in innovative ways to improve service levels while decreasing costs."

SmartCore designed the network to be a medianet, meaning that it delivers an excellent video experience without interfering with the performance of other applications operating on the network. Early College High School teachers will use network-connected smartboards to display and annotate information on their PC screens. The same displays can be used for telepresence, to bring experts from any location into the classroom.

Results

Economic Development

The LeGrand Center is a cornerstone of the county's economic development plan. Bringing conventions to the county will increase spending in local hotels, restaurants, and retail stores. In addition, businesses that visit the Economic Development office to investigate moving to the county will see tangible evidence of the county's commitment to developing an educated workforce.

"A larger pool of workers with high school diplomas and two-year degrees makes the county more marketable to employers considering investing millions or billions in our community," says Boyles. "It's a positive cycle, because more employment opportunities increase the likelihood that our new graduates will stay in the community."

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Roger Holland
Architect, Holland and Hamrick Architects RA

Preparing Students for 21st Century Careers

The school board expects the state-of-the-art facility to make the Early College High School program even more appealing to students and their parents, building on its early success increasing the graduation rate. Early College Students can watch county government at work by simply walking upstairs.

Connected Government

The school district, community college, and county commissioners agree that the Smart+Connected Communities project has brought different community groups together for the common good. "This collaboration with the board of commissioners was an opportunity to have positive dialogue on a project to benefit the community at large," says Boyles. "The Smart+Connected Communities project created a new atmosphere of cooperation within government. We've moved beyond the notion of needing different buildings for different public sector organizations."

The boards continue to meet together two or three times a year to track progress and discuss new opportunities for collaboration.

Lower Energy Bills Through Environmentally Sustainable Design

The new building takes advantage of the Cisco Smart+Connected Buildings framework to minimize energy consumption, helping budgets as well as the environment. Facilities personnel can monitor real-time and historical energy consumption for all building systems from a unified web interface. They can even adjust building systems from home, for example, lowering temperatures if the building is closed due to weather.

LeGrand Center is expected to receive LEED Silver Certification, and the intelligent building systems contributed points. "Connecting building systems to the same IP network used for other applications significantly reduced total cost of ownership," says Holland. "The upfront capital outlay was no more than for separate controls, and ongoing operational costs will be far less."

Next Steps

Holland and Hamrick Architects has already designed a new middle school building with the same Cisco technologies as the LeGrand Center. Advanced networking and telepresence technology will help expose students to the technology they will encounter in the workforce. "Like schools in every state, we're experiencing budget cuts affecting our ability to continue providing programs," says Boyles. "Therefore, we have to be smarter in our design of facilities. Paying a little more upfront for an advanced network can pay dividends by reducing energy bills and using video to extend the learning experience outside the classroom walls."

The school district is considering delivering the Early College High School classroom experience to traditional high schools around the county. "If students can't get to the classroom, we can take advantage of the medianet to deliver the classroom to the students," says Boyles.

Technical Implementation

Facilities staff at the LeGrand Building will use Cisco Network Building Mediator to monitor and control building systems, including HVAC, lighting, and kitchen refrigerators and freezers. "A web dashboard provides graphical reporting of real-time data as well as historical trends," says Winn, of SmartCore. Mediator also monitors environmental sensors deployed throughout the building, and sends alerts to facilities personnel when usage exceeds thresholds expected based on current temperature, humidity, and light levels.

Using the Cisco Physical Access Control solution, the county can control which areas each employee can enter based on the employee's role. Cisco Video Surveillance IP Cameras will monitor the building interior and exterior, and security personnel will be able to monitor real-time or archived video from any web browser. SmartCore set up the system so that security personnel can quickly retrieve video associated with access control events, such as door openings or alarms. SmartCore is also integrating the Cisco Physical Access Control system with Microsoft Active Directory so that the employee database is always up to date, and security personnel do not need to spend time adding new employees or removing terminated employees.

Product List

Borderless Networks:

- Cisco Smart+Connected Buildings
- Cisco Catalyst® Switches
- Cisco Integrated Services Routers
- Cisco Unified Wireless Network

Physical Security:

- Cisco Physical Access Control
- Cisco Video Surveillance Manager
- Cisco Video Surveillance IP Cameras

Collaboration:

- Cisco Unified Communications Manager
- Cisco Unified IP Phones
- Cisco TelePresence® Systems
- Cisco Digital Media Suite, including Cisco Digital Signs and Cisco Show and Share®

For More Information:

To learn more about the Smart+Connected Communities framework, visit:
www.cisco.com/go/smartconnectedcommunities

To learn more about Cisco Physical Security and Building Systems, visit:
www.cisco.com/go/physec