

Upward Mobility: The Extricom 802.11n Deployment at TSTC



Colleges and universities are the first step in producing a highly technologically skilled workforce. Access to IT resources is key to the process, and wireless LAN (WLAN) the best way to ensure access. Increasingly, the WLAN of choice is 802.11n, with its promise of improved coverage, capacity and speed.

Not all 802.11n Wi-Fi systems can easily support large user populations or diverse applications, however. Texas State Technical College (TSTC) Waco wanted a system flexible enough for the day-to-day demands of 5000+ students and that could support any application the College might deploy in the future. The logical choice was Extricom.



Living with the Customers

The future is now at the Waco campus of TSTC. This campus, the largest in the TSTC system, focuses on technical/vocational education, and network requirements – supporting over 5,800 students and faculty members – are just as complex as the most sophisticated enterprise.

As Pat Davison, TSTC's Director of Network & Telecommunication Services put it, "Being a college, I live with my customers, so I have to have a wide-open network and at the same time, a very closed, secure network. I have a corporate environment, an academic environment, and a residential environment, and they are all running up and down the same communications path."

Mobility, Mobility, and More Mobility

Working wireless into this mix became an issue when a project to upgrade TSTC's core network was expanded to include implementing WLAN. While 802.11n was an obvious choice, the choice of vendor wasn't as clear-cut.

A primary requirement was enabling what Davison called "mobility, mobility, and more mobility." But most conventional Wi-Fi networks consist of uncoordinated access points, which have difficulty handling many active wireless users converging in the same area. The WLAN also had to provide support for legacy 802.11b/g systems without impacting newer 802.11n clients, a challenge for traditional wireless systems based on micro-cells.

'Not Me' Technology

At a tech trade show, Davison came across "a

Wild About Wi-Fi

Wi-Fi is as much a part of university life as classes and exams. Originating as a "hotspot" accessory, wireless networking has become a baseline technology that students expect. And once installed campus-wide, WLANs are swamped, with more than 100% usage increases per semester.

This enthusiasm is understandable, but a problem for college IT departments. Unlike an office where wireless users are evenly dispersed in cubicles, students bunch together, jamming access points and resulting in poor performance for all. And students typically leverage a wide variety of wireless technologies, sparking QoS issues as diverse applications contend for the same limited bandwidth.

To satisfy tech-savvy users, colleges have been turning to 802.11n. For IT departments, 802.11n's superior coverage and 6X bandwidth seems ideal to enable "learning anywhere." And since equipment refresh cycles at universities are long, technology must sustain the application install base well into the future.

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Pat Davison
Director of Network &
Telecommunication Services
Texas State Technical College

Project Scope

Implement wireless LAN to provide data connectivity on central campus of one of the nation's largest residential two-year technical colleges. Network will provide connectivity to faculty/student population of 5,800, with potential user population of 2,000+ wireless devices at any one time.

Solution

Extricom EXSW-1600 switches and EXRP-30n/EXRP-40E access points

Separate Channel Blankets for 802.11n users and 802.11b/g users

Results

Comprehensive wireless coverage provided for all major areas of campus, including 1000-yard-long outdoor mall area

WLAN provides base for future expansion of applications, including VoIP and online printing

System installed by TSTC with minimal outside help and has experienced no major administrative issues since "go live"

horse of a different color," Extricom. Extricom's WLAN is built around the Channel Blanket architecture, which combines the signal of multiple APs operating on the same channel as contiguous blankets of coverage. Within the Channel Blanket, wireless clients associate with a switch rather than an individual AP, and the switch coordinates AP transmissions to eliminate co-channel interference. There are no handoffs between APs as clients move around. In effect, the entire network appears to the client as a single large AP.

The Channel Blanket architecture makes it easier to plan and deploy wireless networks. Conventional wireless LANs must carefully arrange AP location, channel selection and power levels in an attempt to reduce co-channel interference by minimizing overlap of adjacent APs. In the Channel Blanket, there is no co-channel interference and overlap of APs actually increases the redundancy and robustness of the wireless coverage. APs can also be densely deployed, alleviating capacity issues in crowded environments.

The robust connectivity this delivers is a clear technological differentiator, in Davison's opinion. "It's really an apples-to-oranges comparison. When all the other vendors say 'me too' and argue over the same feature set, Extricom comes along and says 'not me.' There was just no other vendor that had dealt with contention in the manner that Extricom did."

Layering 'n'

Meeting TSTC's project specifications was essential, but Extricom's ability to support future needs was almost as critical. Channel Blanket architecture enables multiple blankets – in effect independent networks – from the same physical infrastructure. This flexible approach allows different applications to be layered on separate blankets, with each layer optimized for the application it supports.

TSTC has used layered Channel Blankets to separate 802.11b/g devices from 802.11n clients, minimizing conflicts between the standards. "Our reality has been that implementing 11n hasn't been any different than b/g," states Davison. "Splitting up our network hasn't cost us in terms of complexity

or man-hours. And it makes user support real simple: when someone calls the help desk we just say 'try to connect to n, if you can't, connect to b/g'."

What Happens After It's Installed

TSTC's wireless deployment has created a gigantic hotspot spanning much of the central campus. Extricom 802.11n switches and APs provide coverage inside all major buildings, and thanks to 802.11n's superior range, "leftover" wireless signal spills onto the campus's central open-air mall, enabling an outdoor public access network.

TSTC's IT Department has easily met their mandate to support robust data connectivity, and is now planning implementation of other applications, including VoIP and iPrint services. The WLAN enables resilient VPN connections into backend data systems, and continuous mobility within the Channel Blanket means minimal problems with latency or dropped sessions.

For Davison, the "WYSIWYG" nature of the Extricom system is its ultimate value compared to other systems. "Extricom and other major wireless vendors, I think they're equal on paper. But what makes Extricom better is what happens after it's installed. With other vendors, you think 'gee how do I solve this problem, how do I do that...'. With Extricom, it just works as expected. Our only issue is rolling it out as fast as possible because once you turn wireless loose, the users expect to have it everywhere."

Continuing Education

TSTC views the Extricom deployment as a long-term investment in "learning by thinking and doing." For Davison, mobility is key to this. "Where Extricom will help us is that the classroom ceases to be a brick-and-mortar location, room 112, third floor. Education continues wherever you happen to be at the moment with your wireless device."

Davison is putting out the word about Extricom WLAN to his peers in other IT departments, but ultimately thinks that the system's reliability and quality speak for themselves. "We've got a Cadillac and we're not even using all the features yet. But it just makes sense for what we're trying to do."