



Retailer's Wireless Growth Requires Contention Solution

When Pacific Sunwear moved to new offices in Anaheim, Calif., in 2001 because of continued company growth, the company decided to implement wireless LANs in both the 180,000-square-foot corporate offices and in the adjoining 360,000-square-foot distribution center. Ron Ehlers, the retailer's vice president of information services, went with what were then state-of-the-art wireless LANs, one with about 16 access points from Cisco Systems in the corporate offices and one with 23 access points from Symbol Technologies in the distribution center.

As you would expect, the distribution center's wireless LAN was intended to enable the use of handheld scanners for inventory management. The corporate wireless LAN was aimed mainly at IT staff, so they could work throughout the building helping employees while remaining connected via wirelessly enabled notebooks. Within a year, Ehlers realized that the mobile IT staff needed phone access from throughout the building as well, so he explored first cellular walkie-talkie systems from Nextel but then decided on a voice-over-wireless-LAN system from SpectraLink, since it integrated into the existing PBX system. (Ehlers also decided against the cellular approach because in-building coverage was inconsistent and it would require paying a monthly fee per user.) So the corporate wireless LAN was now managing both data traffic and voice traffic, with a dozen or so users of each.

Soon, other staff wanted wireless data and voice access, after witnessing the mobility and connectedness it provided the IT staff, so the user base began to expand, as first the network services team went wireless and then the internal security staff, and then the human resources trainers. Other employees also began accessing the wireless LAN via their notebooks, which more and more were equipped with wireless cards or internal radios. The increased demand on the wireless infrastructure was compounded by a growth in employees, as the 900-store chain continued to expand. In just the last year, the IT staff alone grew 20% to serve a growing staff population, Ehlers notes.

"You started to see 10 laptops around the conference table," Ehlers recalls. But Pacific Sunwear also started seeing wireless LAN saturation at various access points, as well drop-offs and more problem hand-offs as users roamed. Working with Cisco, Ehlers decided to add more access points to handle the increased traffic, but he was concerned about channelization, where to prevent signal conflicts, adjacent access points use different channels within the 802.11b standard's 2.4GHz spectrum. Channelization can confuse client devices, since they get good signals

from more than one access point and continue to switch back and forth between the available channels to access them, resulting in poor connections. (In the distribution center, this contention did not occur, despite the company's growth, because the amount of data transmitted by handheld scanners and the occasional supervisor's laptop is nowhere near the levels used by voice and corporate data systems, Ehlers notes. Thus, the existing Symbol network needed, and still needs, no capacity increase.)

While the effort to relieve the corporate wireless LAN congestion through additional access points proceeded, Ehlers continued to explore alternatives, since his staff was having difficulty with the Cisco access points already in place, including difficulty in management and some failures in hardware. "You don't know what you don't know — it's important to continually monitor what's out there," he says.

Ehlers came across Meru Networks, which offers access points and a proprietary controller for automated load balancing and traffic management that promises to handle five times the traffic of a regular 802.11 access point system. Although the controller is proprietary, and the Meru access points require it, the Meru network runs the standard 802.11b protocols, so no proprietary software or hardware is needed elsewhere on the network or on the client devices, he says. The hardware also puts all access points on one channel, so there is no chance of client devices moving back and forth between channels trying to decide which is optimal.

Ehlers decided to give Meru a chance, after being promised that Pacific Sunwear would not pay if the Meru system didn't deliver and had to be removed. "It's not that difficult to mitigate the downside," he says, when trying out new vendors or lightly proven technologies. After all, Ehlers could have continued to work with Cisco to find a solution. But it did work, Ehlers says, and with the same number of access points as it originally had — 16 — the Pacific Sunwear corporate LAN's contention issues were gone, as were the drop-off and hand-off problems.

Challenge

Deliver wireless data and voice to its rapidly growing employee base at its 180,000-square-foot corporate offices

Solution

- Meru's over-the-air Quality of Service (QoS) for both downstream and upstream traffic ensures high quality data service users in high-density environments
- By coordinating all traffic on the network, Meru's WLAN System eliminates co-channel interference and removes complex RF planning and management tasks
- Meru's Virtual Cell technology places all traffic on a single channel to eliminate co-channel interference and resultant bandwidth loss

Benefits

- Network scales to support high-performance wireless services for growing user base
- Users able to roam seamlessly without dropping calls and data sessions, thus reducing the number of support calls
- Single WLAN infrastructure that simultaneously delivers high-quality voice and data