Business Case

Wireless LANs Accelerate Inventory Process for Michigan's Largest Independent Furniture Retailer

Art Van Furniture needed a means for reducing the time and labor expended for its triannual company-wide inventories. Using Cisco Aironet® access points and bridges along with Cisco® switches and routers, the company installed wireless local area networks (WLANs) at all 30 stores. In its first full inventory, the company reduced the time needed from seven days to less than a single day. Plans are underway to use the WLAN for a variety of additional purposes.

Art Van Furniture
- Founded 1959
- Headquarters in Warren, Michigan
- Operates 30 stores throughout Michigan
- Employs over 3500 associates
- Ranked among the top ten leading U.S. furniture stores as ranked by Furniture Today magazine

Background

Art Van Furniture is the largest independent furniture retailer in the United States, operating 30 locations in 26 cities throughout Michigan. Each outlet makes deliveries from its own back-room staging area. The family-owned company was founded in 1959 and is headquartered in Warren, near Detroit.

Challenge

For years, Art Van Furniture conducted a full inventory of every piece of furniture in all 30 stores three times per year. Accountants, customer service representatives, vice presidents, and others were dispatched from company headquarters to the stores where they joined store managers, assistant managers, and sales personnel in a time-consuming, manual process. The hand-counted inventory could take up to three days.

Handwritten data then was taken back to the main store, where five members of the clerical staff manually validated and verified what had been written down. The data then was keyed into the main computer and re-verified. These steps added another four days to the inventory and, despite the verification steps, often resulted in hand-counting or data-entry errors that could have been caused by any of the 50 or more people involved in the inventory.

Company officials wanted to simplify the inventory procedure, reducing the time expended and improving stock-tracking accuracy. This would allow the executive team to concentrate on building the company while giving individual store managers, clerical and sales personnel another seven days per trimester to serve and support their customers.

Solution

Art Van Furniture, which had upgraded its wired WAN at all stores in 2000 with Cisco routers, turned to Cisco to set up a wireless pilot in 2002 at one store. “We looked at the Cisco Aironet product and at others but decided that staying with one family would preclude any integration issues. The quality was something we knew we could rely on, but for us the primary issue was simplicity,” says Mike McDonald, technical services manager, Art Van Furniture.

Five Cisco Aironet 350 Series access points were installed at the Drayton Plains outlet, and a storewide inventory was conducted.

Every piece of furniture in the store had been barcoded and, using Symbol Technologies 1846 handheld scanners provided by the main office in Warren, Drayton Plains employees scanned every piece of furniture. The data was transmitted via the Cisco Aironet 350 Series access points to the LAN and from there to the central corporate computer in Warren.

The pilot inventory at Drayton Plains was completed in slightly more than half a day with all data being automatically entered into the corporate computer in Warren. Based on this test, corporate management authorized adding a wireless component to the LAN at all 30 locations.

A team of communications specialists from Wireless Resources, a Cisco Wireless Specialized Advanced Technology Partner headquartered in Troy, Michigan, handled the WLAN installation. As the full WLAN rollout was in progress, three more trial inventories were conducted at Drayton Plains to refine the process.

The company-wide installation of WLANs was completed early in 2003. In most locations, just three to five Cisco Aironet 350 Series access points were needed to cover the entire showroom, business office, and delivery staging room. In those few instances where a store’s delivery staging facility is detached from the showroom—situated across the street, for example—installers added a Cisco Aironet 350 Series Wireless Bridge to connect it into the WLAN. Using a bridge eliminated the need for acquiring leased lines to connect the facilities’ networks and saved the expense of the recurring leased line charges.

The corporate warehouse in Warren, which encompasses approximately 1 million square feet, is covered by 40 Cisco Aironet 350 Series access points and approximately 40 antennas. The access points and antennas are mounted high in the ceiling to avoid being hit by lift trucks. “We worked with Wireless Resources, who built special swinging brackets so that if a lift truck does manage to clip one, it is not damaged,” says Joe Zanchetta, Cisco Aironet account manager. “It’s very unlikely that the access points ever will be hit because they are much higher up. Some antennas have been hit but not damaged.”

Based on direct-sequence-spread spectrum technology and operating in the 2.4 GHz band, Cisco Aironet 350 Series access points and wireless bridges provide a data rate of up to 11 megabits per second and are IEEE 802.11b-compliant.

The Cisco Aironet 350 Series access points also support IEEE 802.1x-based Extensible Authentication Protocol (EAP) services that provide centralized, user-based authentication and single-user, single-session encryption keys for problem-free network security administration and user-based privacy.

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> *—Mike McDonald, Technical Services Manager, Art Van Furniture.*

Installation of the access points led to further upgrade requirements to the LAN infrastructure, so Art Van Furniture added Cisco Catalyst® 2950, 24 switches at each location. "We had some aging 3-Com switches and hubs and wanted to put in something faster," McDonald says. "We now have Cisco 2600 Series routers at every location as well as Cisco 3600 Series routers at the head end which are set up for automatic redundancy. If one should ever go down, the other automatically takes over."

In preparation for a full-fledged inventory, every store began barcoding furniture as it entered its staging area. Then, in November 2002, with WLANs in place throughout the organization, handheld units from the corporate warehouse were distributed temporarily to the 30 stores, and Art Van Furniture ran its first company-wide inventory.

Results

"What used to take 40 or 50 people now is done in less than a day. That first full inventory took between six and seven hours, and the entire inventory—all 29 stores—was booked that very night," McDonald reports.

"We have not quantified our savings into dollars and cents, but the enormous reduction in time translates directly into a substantial savings in hours available to work with customers, and that is an incalculable benefit. Plus, we believe the accuracy is much better than it was through multiple manual steps," he adds.

Next Steps

For the present, inventories require temporary distribution of handheld units. Afterwards, the units are returned to the main office in Warren. Art Van Furniture plans to acquire additional handheld units soon for the warehouse and permit the current units to remain at the individual stores for day-to-day use. A "ruggedized" unit has been modified from its original condition, creating a more durable version that is resistant to harsh conditions. This typically includes adding a protective case, soldering circuit connections, placing rubber shock cushions in strategic areas, and adding unbreakable glass in display screens.

This use will include instant inventorying of new furniture. All stores have been equipped with outdoor antennas that will extend WLAN coverage outside to newly arrived delivery trucks. Furniture can then be scanned as it arrives and is offloaded. "When furniture is delivered, it will have a barcode, so when a truck backs up to the dock, employees can start to record the data wirelessly even before it leaves the truck," McDonald states.

Art Van Furniture plans to use wireless handheld units for outdoor tent sales during the summer months. By extending the WLAN into a parking lot via Cisco wireless bridges, a store can set up a secure point-of-sale unit with handheld or conventional equipment

Art Van Furniture uses the CiscoWorks 1105 Wireless LAN Solution Engine to manage the access points and may eventually use it to govern the entire WLAN. "At present, we shut off the access points most of the year since they are only used for inventory. But that will change as we add further uses to the WLAN, and that's when we'll need to use more CiscoWorks capabilities," says McDonald.

The CiscoWorks Wireless LAN Solution Engine is a specialized, easily deployed operational solution for managing an entire Cisco Aironet WLAN infrastructure. It provides centralized template-based configuration with user-defined groups to effectively manage a large number of access points and bridges. It monitors the Extensible Authentication Protocol (EAP) and EAP Cisco Wireless (also known as Cisco LEAP) authentication server and further enhances network security management by detecting misconfigurations on access points and bridges. Other capabilities include proactive monitoring, troubleshooting, notification of performance degradation, and the ability to improve capacity planning.

The WLAN will also help in a salesperson's pre-sales process to improve customer care. Carrying a handheld unit, the salesperson can scan any item for data such as availability, color options, and original price. "That price data can be useful because it gives the sales representative an idea of the margin he's working with. There's no reason to dash off to the sales manager, which means breaking contact with the customer, even if just for a short time. We have found that the longer you can remain in touch with your customer, the less likely you are to lose a sale. The WLAN gives us access to whatever we need at all times," he says.

Each item can be written up on the wireless handheld unit as a salesperson works with a customer to develop a purchase list. "That way, there's no reason for the salesperson to spend time at the end of the sale writing in all the model numbers and prices. It's all completed and ready for payment once the final decisions have been made," he says. "We will create the software ourselves. It's definitely on the drawing board."

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