

Protecting the Wireless LAN As You Sleep

Select Comfort® uses Observer® Suite to perform site surveys, find rogue access points, and enforce corporate policies for their wireless network.

The Select Comfort Corporation (NASDAQ: SCSS), creator of the revolutionary Sleep Number® bed, has over 2,600 employees, 368 retail outlets, and reported net sales of \$458 million in 2003. Headquartered in Minneapolis, Minnesota, Select Comfort also has two manufacturing plants in South Carolina and Utah.

For years, network administrator Christian Wilson has used Observer to monitor, manage and troubleshoot the company's network. Recently, when Select Comfort implemented an 802.11 wireless LAN, Wilson used Observer to deploy access points, load balance wireless traffic, find rogue wireless devices and implement WLAN corporate policies.

Select Comfort's WLAN first emerged in 2002. Inventory movement transactions are generated by scanning with wireless handhelds used by employees throughout the company's manufacturing locations. These handhelds provide real time visibility of accurate inventory data. Inventory consists of materials relating to the manufacturing and engineering of the Sleep Number bed including: mattresses, foundations, pillows, and pumps. Scanning and tracking inventory is essential for the Just-in-Time inventory system Select Comfort uses to manage costs and stock levels.

"At first, our WLAN was created solely to support the devices used by employees managing inventory," said Wilson. "Over the years it has grown to support our corporate users as well. With Observer's many WLAN features, I can monitor utilization, watch for rogue access points, run usage reports, and perform baselining activities – improving the performance of our wireless network."

A Sound Return on Investment

Select Comfort first started using Observer Suite in 2002, when Wilson was looking for an alternative to Network General's Sniffer® analyzer.

"I had used Sniffer for three years and started looking for a product that was reasonably priced with solid functionality. After reading reviews of Observer, I decided to learn more. I've been a solid Observer user for the past two and a half years. Observer not only competes head-to-head with Sniffer -- it also beats Sniffer in many categories. Many features you would normally pay extra for with Sniffer are included with Observer. For example, wireless support is included with Observer where as with Sniffer it was an additional cost. When you throw in the price difference, Observer wins hands down."

Surveying the Network

Observer's Wireless Site Survey Mode offers scanning of multiple 802.11a/b/g channels displaying numerous wireless statistics including: frame types, management frames, speeds, signal strength, signal quality and channels in use. A convenient channel map provides a quick view of current network status. By performing a Wireless Site Survey, Wilson was able to measure signal strength and signal quality of his wireless devices.

"Observer's Wireless Site Survey mode showed me our access points were not positioned well," said Wilson. "Signals were bouncing back and bleed was out of control. We had to turn our access points down because Observer showed there was too much power going through the airwaves. Inventory also played a factor because cardboard absorbs waves while metal is reflective. So it varies and you never get the same signal twice. With Observer, I could find the most optimal location for the access point and ensure the antennas were positioned correctly for maximum signal strength."

Safeguarding the WLAN from Internal and External Threats

As Select Comfort grew, the network needs evolved. WLAN access was soon expanded to desktop and laptop users. Immediately, security became a concern. Fortunately, with Observer, Wilson could monitor WLAN traffic and protect the network from security threats.

"The security scare is very real," said Wilson. "We were using WEP for encryption, but Observer showed all this traffic flying through the air and it made me worry about how easy it could be for a would-be hacker with a wireless card in our parking lot to get access to our data. We upgraded to IPSEC (IP Security), a much stronger encryption. Now our data is more secure, but I can still monitor the network since Observer has the ability to monitor key WLAN statistics like signal strength and quality, regardless of encryption."

Many employees use laptops and wanted to take advantage of the corporate WLAN by bringing their laptops into conference rooms while still connected to the network. Unfortunately, a few employees decided to purchase an access point on their own rather than approach the IT department. This caused a concern for Wilson.

"With Observer, it's easy to find rogue access points," said Wilson. "I simply load Observer onto my laptop and walk around the building to find which access points are transmitting. I only had six access points deployed, but Observer saw a lot more. Employees were purchasing units on their own and installing them below their desks. This was incredibly dangerous from a security point of view. Thanks to Observer I created a new corporate policy to help protect our network that I could easily enforce with the analyzer I already had."

In summary...

About Select Comfort

Creators of the revolutionary Sleep Number® bed, the Select Comfort Corporation is the nation's leading bed retailer, holding 26 U.S. issued or pending patents for its personalized sleep products. The company designs, manufactures and markets a line of adjustable-firmness mattresses featuring air-chamber technology, as well as foundations and sleep accessories. Select Comfort products are sold through its 368 retail stores nationwide, including 13 leased departments in Bed Bath & Beyond stores; through selected bedding retailers; through its national direct marketing operations; and on the Internet at www.selectcomfort.com.

Challenge

When the organization desired to implement an 802.11 wireless network, network administrator Christian Wilson needed a solution capable of effectively and efficiently monitoring WLANs, including the ability to perform a Wireless Site Survey, monitor for rogue access points, maintain network security and load balance wireless traffic. To perform all these tasks, Wilson turned to Observer Suite, a comprehensive network analyzer with the ability to monitor both wired and wireless traffic.

Solution

Using Observer's wireless monitoring capabilities, Wilson could instantly measure signal strength, signal quality and determine optimal access point locations. With Observer's baselining features, Wilson stabilized WLAN traffic levels and monitored for sudden spikes in WLAN traffic, which could indicate a security threat. Observer also identified rogue access points inside the building, causing Wilson to implement a new wireless security policy. By taking advantage of Observer Suite's comprehensive features, Wilson can easily ensure Select Comfort's wireless network is well-protected and well-managed with the same network analyzer that watches over the wired network.

"The knowledge and insight provided by Observer is priceless. How can I quantify how much money and time we've potentially saved by locating rogue access points? Observer ensured our data wasn't susceptible to hackers - I can't tell you how much that is worth."

Christian Wilson
Network Administrator
Select Comfort

Using Performance Indicators for Proactive Management

Observer also monitors bandwidth utilization by comparing actual network activity with network capacity offering insight into network load. This feature lets Wilson balance WLAN traffic ensuring no device is over-burdened.

"Each of our access points can handle about 10 or 15 users and with Observer I can quickly see how each access point is being utilized," said Wilson. "It's easy to juggle network traffic accordingly to get the maximum throughput on each access point."

Observer's Network Trending collects and stores network statistics so IT administrators can review and analyze the data over time. With this data, baselining activities can be performed to gauge how the network is performing.

"With baselining I can tell if something is out of the ordinary," said Wilson. "At first my assumption was that our network traffic dies down in the evening, but after reviewing Observer's reporting I saw this was not the case. The more you understand traffic levels the better you can engineer your network accordingly. Every morning, I check the bandwidth utilization graph for inconsistencies. For example, if the network traffic suddenly shot up at 2 AM, I know that is out of the ordinary and something I need to investigate."

Every network requires upgrades, capacity planning and long-term adjustments. With Observer's comprehensive reporting features, Wilson lets his management team generate Web reports at their leisure to understand network health.


"With this type of reporting and data, I have the evidence to persuade my manager to fund network upgrades," said Wilson. "Observer's capabilities provide a great deal of value to our entire department. Once you get your management on board, getting new versions is much easier."

No More Counting Sheep

Observer has helped save Select Comfort key dollars in unnecessary equipment upgrades by pointing to the source of the problem. When the network began slowing down, the immediate assumption was capacity issues but Observer showed this not to be the case.

"With Observer's reporting I could see our WLAN traffic was slowing down," said Wilson. "I thought the issue fell with our current capacity and we needed to upgrade our access points. By digging a bit deeper with Observer, we saw a new application was actually causing the delay. This application was internally developed and by adjusting the program, we were able to get throughput back to normal – without having to purchase a thing."

Observer's ability to secure Select Comfort's network traffic is the single most important benefit to Wilson.

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About Top Talkers

The Observer Top Talkers display offers an easy way to view all stations on the network showing which station is consuming the most bandwidth. This screen also shows detailed traffic flow statistics that can indicate a runaway station, a broadcast/multicast storm, or an unbalanced switch. With this information, network administrators can determine network use patterns, detect faulty network hardware, and determine what percentage of the network's bandwidth potential each system is using – all from one comprehensive window.

About Network Trending

Observer collects long term Network Trending data to help administrators understand what is typical for their network. Network Trending provides baselining capabilities to collect, store, view and analyze network traffic statistics over long periods of time. Through Network Trending, administrators can continually monitor network health and recognize signs and symptoms of network inefficiencies.

About Comparison Analysis Reports

Observer offers administrators ways to measure bandwidth utilization, error distributions, router statistics and more with Comparison Analysis reports. Because these reports are measured over time, they aid in undertaking future capacity levels for planning and traffic level management as well as provide cost justification for network capacity upgrades.

About Wireless Site Survey Mode

Wireless Site Survey displays a multitude of statistics about your wireless activity sorted by station or Access Point. Statistics include: General Info, Frame Types, Management Frames, Data Frames, Speeds, Signal Strength, and Channels in use. A convenient mapping of channels being scanned or which channels are being analyzed provides a quick view of current monitoring status.

About Wireless Access Point Statistics Mode

The Access Point Statistics display shows traffic passing through any Access Points (AP) visible to the Observer wireless NIC. This mode is an all-purpose tool for maintaining performance and security on a WLAN that uses Access Points. Data includes: wireless stations that are connected to an AP, non-wired stations that they communicate with; levels of signal strength, quality, data transfer rates, and non-data transfer rates on each station; AP traffic totals and more. For example, you can

immediately see if there is a station connected to the wrong AP, or if an unauthorized AP has been installed. AP statistics will display whether a station has a problem with quality or range of connection based on the number of reassociations and retransmissions, or whether a station is misconfigured based on station poll totals.

About Wireless Channel Scan Monitor

The Wireless Channel Scan Monitor shows activity by channels on your wireless network. This tool is useful for finding which channels are being utilized on your network, or to see if a rogue AP is transmitting on an unauthorized channel.

About Bandwidth Utilization

Bandwidth Utilization lets you see in real time the total traffic and the bandwidth on your LAN. Observer graphs the information against a maximum theoretical bandwidth to give you insight into the total LAN load, which is useful in determining optimal LAN configuration and solving global traffic issues before they become global problems. A maximum (or peak) utilization display makes it easy to run bandwidth utilization unattended and still monitor LAN loads. Switched utilization shows total switch efficiency, and throughput on a port-by port basis.

About Network Instruments

Networks Instruments is the industry leading developer of distributed, user-friendly, and affordable network management, analysis and troubleshooting solutions. The award-winning Observer family of products combines a comprehensive management and analysis console with high-performance Probes to provide integrated monitoring and management for the entire network (Ethernet, Gigabit, Wireless, and WAN). All Network Instruments products are designed utilizing Distributed Network Analysis (NI-DNA™) architecture. With NI-DNA, the Observer solution set simplifies network troubleshooting and management, optimizes network and application performance and scales to meet the needs of any organization. Founded in 1994, Network Instruments is headquartered in Minneapolis, Minnesota with offices in London, Paris and throughout the USA with distributors in 50 countries. More information about the company, products, innovation, technology, NI-DNA, becoming a partner and NI University can be found at www.networkinstruments.com.

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