



## Cognio Case Study

### **WiFi makes parking garages safer, more accessible; Spectrum Expert makes it possible**

Wireless networks may have found yet another place to call home: parking garages. The disparate expanses of these massive decks can prove difficult to monitor, as they are by nature dark and claustrophobic. Enter the wireless network. The idea is still in development, but some big players are getting behind the new venture. With wireless monitoring, parking attendants could keep tabs on every dark corner of the lots. An ever-present network would boost attendant safety and wirelessly track all activity within the garages.

The applications in these garages are many. Safety is likely at the fore of any strategy. With wireless networks, attendants will be able to monitor what's going on and where, thus making these structures more customer-friendly. On a more immediate level, both customers and attendants will benefit, as wireless sensors will enable attendants to tell a driver where he or she can find an empty spot, thus alleviating congestion and aimless driving on the ramps. In fact, a service in Paris monitors the status of about 120 parking garages in the city. Those searching for a spot can use a cell phone to learn which garage has vacancies. The garages are connected to a central server via the Internet, and when the status of a garage changes, the garage sends a message to the server, which sends updates to wireless service providers, allowing drivers to call for updates.

But deploying a wireless network in such a high-traffic area, so to speak, is not without its challenges. Within the cavernous spaces lie innumerable sources of interference, including cars. Cars are constructed a lot of reflective material, causing signals to bounce and not reach their destinations. Moreover, they are moving, potentially running against more and more signals. In addition, parking garages are often adjacent to large campus environments that have already deployed their own wireless networks, making the parking lots susceptible to interference from other 802.11 networks, which can cause co-channel and adjacent channel interference from any number of devices, ranging from microwave ovens and cordless phones to highly evolved medical equipment.

Houston-based Net Star Telecommunications Inc. is working with two Fortune 100 companies on a nationwide wirelessly enabled parking garage project. This initiative aims to provide a better customer experience overall. Parking garage attendants will be equipped with PDAs so they can fully monitor the garages.

Net Star is a WISP that helps manage wireless networks in Houston. The company has a nationwide reach, employing 26 full-time employees at its Houston

headquarters and a network of 10,000 contracted technicians across the country. According to John Agathon, vice president of sales for Net Star, the company manages networks with up to 50 to 75 access points. The company does installation and troubleshooting and has found that Cognio's Spectrum Expert is an integral part of Net Star's toolkit, especially when working with the more innovative wireless LAN deployments, such as those in sprawling parking decks.

### **How Net Star Uses Spectrum Expert before the First AP is Installed**

The company just finished a prototype in downtown Philadelphia. This particular parking garage was adjacent to a government building, and not surprisingly, where Net Star was able to use Spectrum Expert to determine that this building was generating a lot of interference, Agathon says. "The parking garage where we did the deployment was right next to a federal building, a hospital and the mint," he says. "You can just imagine how much wireless was flying around."

On a usual site survey, Net Star does a pre-sweep and a post-sweep of the area using Spectrum Expert, Agathon says. "We need to see what kind of interference we're getting so we can deploy with the correct equipment," he says, referring to the pre-sweep. Net Star uses the Spectrum Expert-enhanced post sweep to evaluate how the deployment is working.

"Without Spectrum Expert, we would not have been able to do a successful design or deployment. It was crucial," Agathon says. "We have to minimize any problems with interference before we start on a site," he adds. "Spectrum Expert is all about mapping out the lay of the land, and not just in WiFi."

For example, in the Philadelphia deployment, Spectrum Expert showed sources of illegal 2.4 GHz equipment. In addition, the hospital not only had a lot of interfering medical equipment, but Spectrum Expert also found that its wireless network was overlapping into the garage site, Agathon says.

"Cognio's Spectrum Expert enables me to see exactly what I'm dealing with, and I can then make decisions based on engineering, access point placement and power."

### **Spectrum Expert Makes Troubleshooting Simple**

Parking garages are not the only site for which Net Star uses Spectrum Expert. For instance, Net Star was working with a peer-to-peer wireless network client in Houston. "In the 2.4 GHz band, they kept having problems," Agathon says. Some were recommending replacing equipment, which would have been costly and time-consuming. "But with Spectrum Expert, we saw massive amounts of horizontal polarization. Normal polarization is vertical," he says. "Once we saw that, all we had to do was change the polarization, and bingo—we were the customer's best friend."

Moreover, Net Star has found Spectrum Expert's cost and form factor to be a boon. "We used to use a third-party wireless engineer in the Houston area for spectrum analysis and troubleshooting," Agathon says. "He would drag out his big traditional spectrum analyzer and charge us \$800 for one visit. It got really expensive and time-consuming because we had to have him come out a number of times. Now we have the Spectrum Expert, which is portable—it fits into the laptop—and it was a one-time expense." That way, he added, Net Star can immediately find and solve problems, reducing the time the customer has to wait for troubleshooting.

Plus, Net Star didn't have to wait long for a return on investment, Agathon says. The company recouped its expenditures on the Spectrum Expert in a matter of weeks and saves about \$5000 each month by using this solution.

## **Conclusion**

As the world of wireless networking continues to evolve and as companies and clients continue to find new and challenging applications for these technologies, companies such as Net Star need to make sure that these networks are working at an optimum level. That includes reliable and easy-to-understand results from site surveys and in essence, on-demand troubleshooting. Spectrum Expert can be a key solution for companies looking to give their customers peace of mind and confidence, creating lasting relationships.