Parking Meter Company Creates New Business Model with Wi-Fi

EXECUTIVE SUMMARY

Photo Violation Technologies

- Parking management
- Vancouver, British Columbia
- 27 employees

Business Challenge

- Encourage sales of high-tech parking meters to municipal customers
- Find a cost-effective alternative to cellular technology
- Gain better control of wireless network operations
- Develop new municipal opportunities beyond the core business

Network Solution

- A Cisco Outdoor Wireless Solution provides wireless data connectivity to municipal parking meters
- Wi-Fi technology provides sufficient bandwidth for wireless transmission of license plate photos
- Multiple channels allow the company to offer both Internet access and parking meter services to its municipal customers.
- Free Internet access is available within 300 feet of each PhotoViolationMeter™ parking meter

Business Results

- The Wireless Outdoor Solution eliminates service charges to cellular carriers and annual license fees
- Photo Violation has expanded its core business model to include wireless Internet and voice over Internet (VoI) services
- For cities, the revenue from wireless parking meters helps create an incentive for municipal mesh networks
- The company's new mesh-based business model has garnered interest from potential municipal customers all over the world.

Photo Violation Technologies deploys a Cisco Outdoor Wireless Solution to offer cities new revenues and services.

Business Challenge

Photo Violation Technologies Corp. makes life easier for anyone who has ever had to feed a parking meter, or any city that has had to maintain one. The Canadian company's PhotoViolationMeter is a "smart" parking meter that allows drivers to pay with cash, credit card, debit card, or with a cell phone. The meters even include a grace period for drivers who overpark by a few minutes. But if a driver fails to pay the parking fee, the meter takes a photograph of the car's license plate. Then, the meter wirelessly sends the photo to the municipal agency that maintains violations. Company officials have proven that the high-tech meters bring in five times the revenue of traditional parking meters, both because the technology makes it easier for drivers to pay, and because it is easier to catch those drivers who do not pay.

When Photo Violation launched trials of the meters in early 2007, the company was using a cellular network for the wireless transmission of license plate photos. But company officials discovered several problems. The first problem was speed: with the General Packet Radio Service (GPRS) cellular technology, the meters took several seconds to connect to the central office. Secondly, Photo Violation officials noticed transmission problems when several meters tried to connect to the network at once, a common occurrence during peak parking hours. Finally the company was unhappy with the level of customer service that its cellular carrier provided, not to mention the hefty monthly service bill.

"It was difficult to work with the carriers, in addition to being expensive," says Fred Mitschele, CEO of Photo Technologies. "We thought there must be a better way. We wanted to be in control of our own network. So we started to investigate other wireless technologies."

Network Solution

Photo Violation was planning a large deployment in the city of Niagara Falls, New York, a popular, high-traffic tourist destination. The team knew that the company needed a centrally controlled solution that would work well in an outdoor environment. Following a brief investigation, the team decided that the company would benefit from an outdoor wireless solution that utilized Wi-Fi technology.

In a wireless mesh outdoor solution, the network dynamically routes packets from node to node (or access point to access point). A few nodes have to be connected directly to the wired network, but the rest share a connection with one another over the air. The fact that wiring issues are mitigated made such a network ideal for a municipal deployment of wireless parking meters; and the fact that Wi-Fi operates in an unlicensed band meant that the company would not have to worry about spectrum fees.

Several startup vendors offered mesh solutions, but Photo Violation wanted a vendor that could handle a large-scale deployment. The company also needed to plan for the future. If the Niagara Falls trial garnered interest from several other cities, the company needed an equipment vendor that could serve multiple large customers at once.

> **"With the Cisco wireless mesh network, almost anyone can be a professional service provider."**
>
> **—Fred Mitschele, president and CEO of Photo Violation Technologies**

"We looked at a variety of companies," Mitschele says. "But we knew that the scale of the project required a company that was both reliable and scalable. That's why we chose Cisco."

With the help of a systems integrator, Photo Violation deployed some 50 Cisco® Aironet® 1500 Series lightweight outdoor mesh access point on light poles across a two-square-mile trial area in Niagara Falls; these access points are centrally controlled by a Cisco 4400 series Wireless LAN controller. Each parking meter is equipped with a Wi-Fi radio that communicates with the mesh access points. The Wi-Fi technology is clearly faster than GPRS.

"Our connection times went from nine seconds with GPRS to two seconds with Wi-Fi," Mitschele says.

The controller's management features distribute network traffic evenly among APs, preventing network overload.

"The network is both self-healing and self-monitoring, two more good reasons to choose Cisco," Mitschele says.

The Cisco wireless outdoor solution also offers the ability to support multiple SSIDs (service set identifiers), giving the mesh the ability to support multiple applications at once. And the Cisco network can also support multiple VLANs, helping keep parking meter traffic secure and separate from any other traffic on the network. In fact, Photo Violation soon realized that it could offer more than wireless parking meter services to its municipal customers: its customers could also use the network for wireless Internet access.

With the help of a Cisco sales and engineering team, Photo Violation created a service that offers free Wi-Fi Internet access to any wireless device within 300 feet of a PhotoViolationMeter. And just like that, a parking meter company also became a wireless Internet service provider.

“We created a service called WiCity™ to provide free wireless Internet access to the city,” Mitschele says.

Business Results

In creating WiCity™, Mitschele reasoned that free Wi-Fi access would give municipalities an added incentive to invest in the wireless parking meters. In fact, the reverse also proved true: the wireless parking meters gave municipalities a good reason to consider offering free Wi-Fi. For the past several years, many cities have considered offering free Wi-Fi Internet access as a civic service, but have hesitated because there was no clear financial benefit. With WiCity and the Cisco network, Photo Violation offers cities both a civic service and a revenue stream.

Not only can Niagara Falls vastly increase its revenue from parking fees, but the city has also a gained a reputation as a tech-savvy host. Visitors can now get free Internet access from their hotel rooms. The city plans to expand the two-square-mile trial into a city-wide deployment. Photo Violation and city officials are discussing plans to offer additional municipal services on the wireless outdoor access points, such as in-vehicle, IP-based video surveillance or wireless meter reading.

Photo Violation is conducting WiCity and parking meter trials in San Francisco’s Golden Gate Park and at the University of British Columbia Endowment Lands. Mitschele says that the company also has heard from some 50 other cities worldwide that are interested in deploying wireless parking meters and offering free Wi-Fi.

PRODUCT LIST

- Cisco Aironet 1500 Series Lightweight Outdoor Mesh Access Point
- Cisco 4400 Series Wireless LAN Controllers.

“The business model works great for us,” Mitschele says. “We offer a model that justifies municipal Wi-Fi service. With the Cisco wireless mesh network, almost anyone can be a professional service provider. We’re receiving active calls from city officials all the time. And they’re always more confident when they find out we’re using Cisco for the Wi-Fi equipment.”

Next Steps

Joining the parking management and Wi-Fi businesses has proven so successful that Photo Violation and Cisco are discussing the possibility of installing access point technology directly into the PhotoViolationMeters, so that they work both as parking meters and as Internet access points, Mitschele says.

And although parking management is still Photo Violation’s core business, the company continues to explore its future as a Wi-Fi service provider.

“We’re going to try to put together a service in which we offer municipal Wi-Fi VoIP phone services for a low monthly fee,” Mitschele says, noting that Cisco offers superior billing and provisioning tools for Wi-Fi service providers.

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