Caribbean Service Provider Upgrades and Deploys Cisco Mobile WiMAX Network

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EXECUTIVE SUMMARY

Customer Name: Scarlet B.V.

Industry: Service provider with WiMAX network

Location: Based in the Netherlands Antilles

Number of Employees: 60

BUSINESS CHALLENGE

- Bring high-speed data access to island residents and businesses
- Research and test voice over WiMAX to provide competitive local phone service
- Bring quality of service (QoS) for voice and mobile services to third-party access devices

NETWORK SOLUTION

- Migrated network to WiMAX for residential and small business service
- Will deploy Mobile WiMAX Profile C

BUSINESS RESULTS

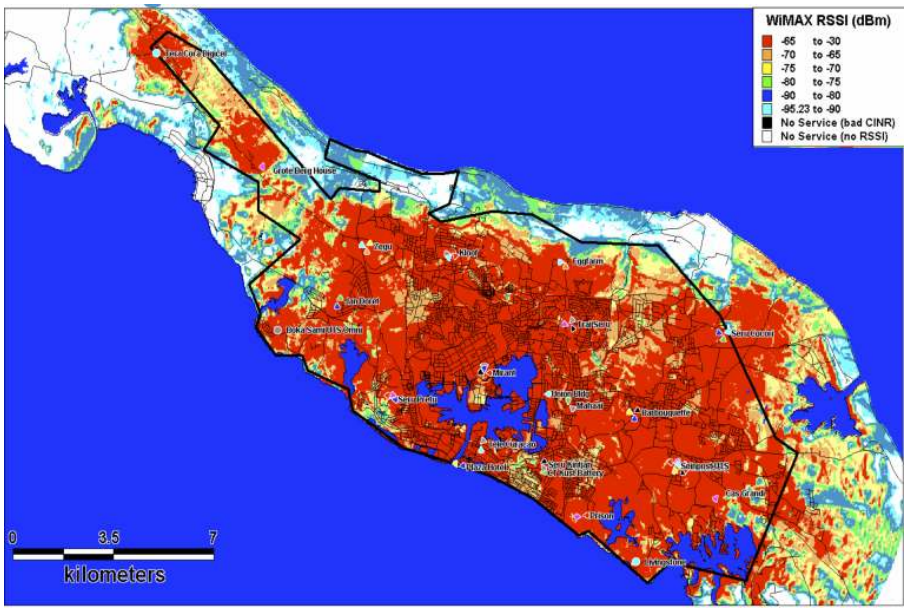
- Improved performance, including better spectral efficiency and throughput
- Access by third-party wireless devices via USB modems and wireless cards

Business Challenge

A reseller of international telephone service on the Caribbean island of Curacao since 1999, Scarlet B.V. became a wireless provider in 2001. The company deployed a residential non-line-of-sight wireless broadband service based on Cisco® gear using Time Division-Synchronous Code Division Multiple Access (TD-SCDMA) wireless networking technology. The infrastructure included the Cisco BWX 8305 Base Station, Cisco BWX 8305 Base Station Antenna, and the Cisco Broadband Wireless Gateway (BWG) on the Cisco 7200 Series Router. Competitively priced, the wireless service, using 2.3 GHz of spectrum, proved popular. The network was also quick and inexpensive to deploy. Two base stations on a 200-meter high tower, one pointing east and one pointing west, from the middle of the largest city of Willemstad, were able to cover 70 percent of the city.

Scarlet used the revenues from the initial deployment of the wireless service to add base stations, then obtained local financing to deploy 50 more base stations over the next two years. This deployment, with a total of 60 base stations, provided service for 80 percent of the populated areas of the island, Figure 1.

Figure 1. Scarlet WiMAX Base Station Topology



The company, however, had greater ambitions. Building on its early success with wireless, the next goal was to provide a competitive local phone service, and Scarlet was intrigued by Cisco's development of WiMAX data services and the ability to integrate IP telephony and broadband video all over the wireless network.

Network Solution

In 2008, with a simple software upgrade that took just three hours, Scarlet migrated its network to WiMAX version 802.16e. The WiMAX network provides improved performance, including better spectral efficiency and throughput, and more efficient and cost-effective operations. The existing Cisco base stations and base station antennas help reduce the throughput of the WiMAX network and lower the number of cell sites required through adaptive beam forming and multi-input/multi-output (MIMO) technologies. Adaptive beam forming is a more efficient and accurate method of sending signals directly to users instead of blanketing a coverage area. MIMO is a data-multiplexing technique that uses multiple, spatially-separated antennas to increase wireless throughput, range, and spectral efficiency by simultaneously transmitting multiple data streams on the same frequency channel.

"The walls of buildings in Curacao are often much thicker than normal buildings to withstand hurricanes, so the adaptive beam-forming technology from Cisco helped convinced us to go with Cisco over other vendors," says Eric Stakland, Scarlet's CEO. "The technology alleviates the need for customers to install long antennas outside of their homes or offices. They just open an account, plug in the wireless modem, and they're connected to dependable wireless service within minutes. Customers like that."

> "With Mobile WiMAX, our customers will have seamless availability between the base stations. They'll be able to make phone calls or Skype video calls using their laptops, PDAs, or phones. It positions us many competitive steps beyond our Wi-Fi and wireline competitors."
> **— Eric Stakland, CEO, Scarlet BV**

Prepaid WiMAX service is popular because residents are used to prepaying cell phone service and even electricity bills. Each time Scarlet subscribers log in, they can choose what speed they wish to purchase for that session. Rates include 128k connectivity for US$2.50 per hour, 256k for $3.00 per hour, or 512k for $4.00 per hour. Sessions are billed based on minutes of usage. Scarlet's advertising campaigns emphasize applications for personal as well as business use, Figure 2.

Figure 1. Scarlet WiMAX Service Ad

In 2009, Scarlet will launch voice service over their WiMAX network to provide a competitive alternative to local wireline and cellular phone service. Voice with dependable quality of service (QoS) instead of “best effort” service will require another upgrade to Mobile WiMAX with Profile C. Besides a software upgrade, Mobile WiMAX requires an architecture upgrade that includes an access service network (ASN) gateway deployed on a Cisco Service Application Module for IP (SAMI) blade in a Cisco 7600 Series Router. The gateway provides QoS for voice along with other services (such as device and subscriber authentication, mobility management, mobile IP foreign agent functionality, and encryption key distribution) that make mobile services accessible to Scarlet subscribers via inexpensive third-party USB modems and wireless cards in laptops, PDAs, and handsets.

Customers wishing to replace their home or office telephone with WiMAX telephony can purchase an inexpensive Linksys voice-over-IP (VoIP) router and a VoIP phone and plug them into the WiMAX modem. Voice service will be routed through the local incumbent telco through a local interconnect agreement.

PRODUCT LIST

- Cisco 7600 Series Router with Broadband Wireless Gateway
- Cisco BWX 8305 Base Station
- Cisco BWX 8305 Base Station Antenna
- Cisco BWX 210 Desktop Modem

Cisco BWX 320 USB Modem

“We’ve done the early field trials, and the voice quality is excellent,” says Scarlet chief operating officer Gilbert de Bree. “We’re looking at bundling voice and Internet service and maybe even TV service through a satellite service provider partner.”

Business Results

With 8000 current subscribers and the anticipation that Mobile WiMAX will help grow that to 10,000 by the end of 2009, Scarlet has already launched a WiMAX pilot on St. Maarten and has licensing to launch in Bonaire. After obtaining the required licenses, Scarlet will deploy a Greenfield WiMAX network on the island of Aruba, which has a market potential the same approximate size as Curacao.

Many Scarlet subscribers carry their modems to their boats, and they report good signal strength as far as eight kilometers from the base station towers. On St. Maarten, which is still on the older TD-SCDMA wireless network, taxi drivers use their modems to surf the web in their cars while waiting for passengers. Scarlet developed a special toolbox for their subscribers on land and sea that plugs into a cigarette lighter outlet and combines a modem, voltage converter from AC to DC, uninterrupted power supply, Wi-Fi application, and router. Users can turn their boat or car into a Wi-Fi hot spot with the toolbox, enabling others around them with wireless devices to get network connectivity.

Mobile WiMAX will make it even easier, with far less equipment, to access high-speed services that will include voice, video, and innovative Web 2.0 multimedia applications.

For More Information

Cisco Broadband Wireless: http://www.cisco.com/go/wimax

Scarlet BV: http://www.scarlet.an/

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