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A Pronto Networks Case Study on city wide Mesh Network for the City of Madison, Wisconsin

Citywide Mesh Network for the City of Madison, Wisconsin

Introduction

The city of Madison, Wisconsin, is rated as one of the top 10 best cities to live in, almost every year. It is located in the center of Dane County in central southern Wisconsin, 77 miles west of Milwaukee with a total area of 219.3 km^2. The city has a population of more than 208,054. Madison is home to the University of Wisconsin-Madison, as well as Edgewood College, Madison Area Technical College, and Herzing College, which gives it a student population of nearly 50,000.


Business Need

Madison's economy is evolving from a manufacturing and governmental service based economy to a consumer services and high-tech base, particularly in the health, biotech and advertising sectors. The need of the hour was to deploy a city wide Wi-Fi network to provide easy and affordable Internet access to every resident, business and visitors to support economic development. The Internet would be accessible to Public Safety officials - police, emergency services, etc. - and the system would provide them guaranteed wireless bandwidth to their security databases. The initial Wi-Fi network would also support the tourism industry and assist hotel managers in increasing occupancy rates and improve customer loyalty by providing Wi-Fi for Public Access. Overall, this step was believed to be a key factor in the economic development of the city.

The municipal Wi-Fi network for Madison was first proposed in May 2004 at its "Healthy city" economic development conference.

Network Solution

Madison's metro-scale Wi-Fi network combines interoperable, open, standards-based hardware and software components. The development team looked at several solutions but none offered the combination of flexibility and security that the city required.
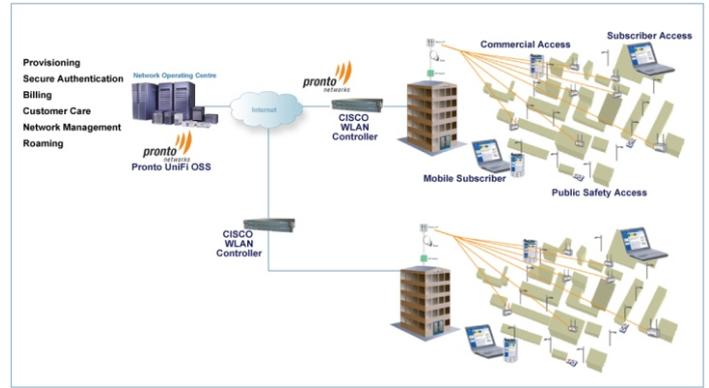

Along with Cellnet, Inc., Pronto Networks - a Cisco Technology Developer Partner (CTDP) provided an integrated solution tailored for the community-wide wireless mesh network of Madison. The "Mad City Broadband" solution includes Cisco's WLAN product portfolio (2006, 4002/4 Wireless LAN controllers, 150x Cisco Mesh APs) deployed with Pronto's UniFi OSS.

Pronto Networks offers a service management solution for broadband wireless networks. The solution includes subscriber registration and management, customer billing, and multiple authentication options to serve a mixed-use deployment. Pronto has demonstrated leadership in providing service control and service delivery solutions in metro markets deploying Wi-Fi mesh networks.

Cisco offers wireless mesh solutions for mixed-use network deployments where both public safety agencies and residents utilize services on a common wireless infrastructure. In this solution, Cisco offers WLAN indoor and outdoor mesh equipment. The Cisco mesh AP solution uses identical indoor/outdoor management based on LWAPP for ease of deployment & management of traffic and services within the wireless mesh.

In the first phase of implementation, Cellnet had installed 150 wireless nodes throughout the city. The Pronto UniFi OSS was operated from a central Network Operations Center.
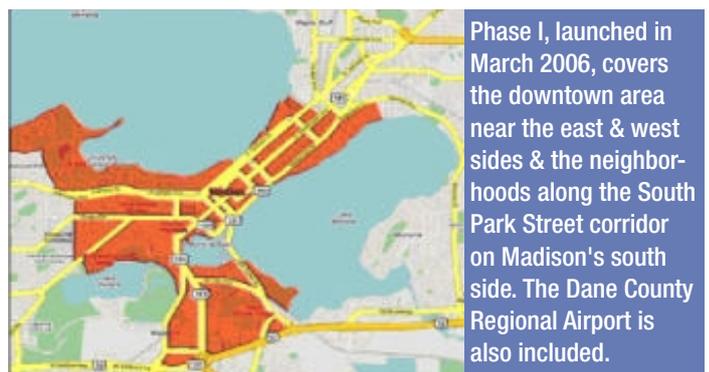
Phase I, launched in March 2006, covers the downtown area near the east & west sides & the neighborhoods along the South Park Street corridor on Madison's south side. The Dane County Regional Airport is also included.

The current configuration can seamlessly manage the present network users. If usage grows beyond that figure, which is likely, "Mad City Broadband" can simply add more Cisco WLAN controllers.

Customizable Captive Portal

Each location can present a uniquely branded user interface, a Splash Page, when the Wi-Fi client device connects to the Cisco WLAN controller. Here, the user can provide his login credentials and get authenticated to start surfing the Internet. Users may also access location-specific information and other services without requiring authentication to the network. New users can use the same web page to go through a customer registration process and purchase access online.

The splash page also enables new users to securely register for both prepaid and subscription plans. For added security, the Pronto solution provides a SSL encrypted registration and authentication process and support for corporate VPN clients that allows city employees secure, encrypted access to the city's information system.
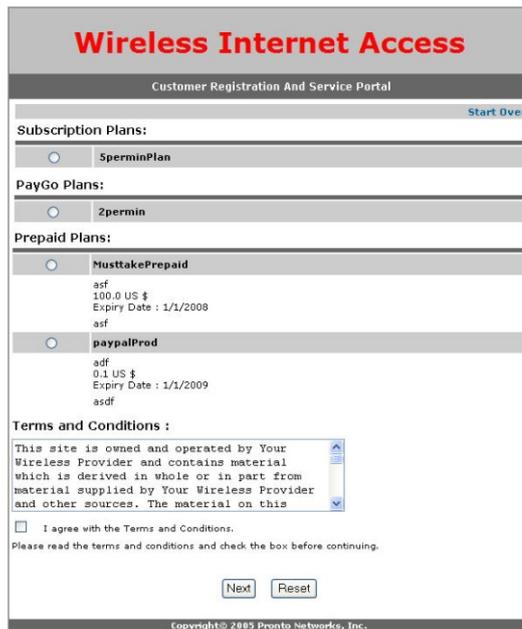
Pronto's OSS enables the customization of splash page for different locations within the City of Madison. It provides customizable walled garden links that enable users to get useful information about the City without logging on.

What lies ahead?

With a city wide Wi-Fi mesh network, the days of searching for Internet hotspots are over, because with "Mad City Broadband", if one has a wireless enabled laptop or PC, they are simply a step away from Internet access.

Once the financial feasibility of phase 1 has been established, the network is expected to expand throughout the city. After the completion of the 2nd phase, residents and visitors will be able to go anywhere in the city, indoors or outdoors, and access the web. Mr. Cieslewicz, the Mayor of Madison, Wisconsin, has indicated he would like to see that expansion occur within the next year.

The partnership of Cellnet, Pronto Networks and Cisco will enable Madison to complete the 2nd phase by 2007 and become a truly unwired city in America.