WiFi Networks Gain Ground While WiMAX Gets Ready

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Mountain View, California

In August of 2006, Google launched a WiFi network in its hometown of Mountain View, California. With radios hanging on lampposts throughout the city, "GoogleWiFi" wireless uses IEEE 802.11b/g standard equipment to bring wireless Internet access to the city's residents, businesses, and visitors at no cost to the user. All anyone needs is a laptop or other wireless-enabled device and a web browser to get online, although users must register and sign in with a free Google account. According to Google, the network is a way for us to give back to the community where its headquarters are located, and to use the Mountain View system as an example for itself and others to evaluate.

Madison, Wisconsin

Several other cities have implemented WiFi networks in downtown areas, airports and other well-used public areas. In March 2006, Madison, Wisconsin launched a WiFi network, "Mad City Broadband." Madison Mayor Dave Cieslewicz first proposed a municipal WiFi network for Madison in May, 2004 at his "Healthy City" economic development conference. In December, 2004, the City partnered with Dane County and the State of Wisconsin to issue a Request for Proposals (RFP) seeking companies interested in building the City's WiFi network. The initial lead vendor selected for the project, AOL, withdrew in September, 2005 and was replaced by Cellnet. The network is being built and operated without the use of any taxpayer funds. By issuing a franchise to an outside vendor to build and operate the network, Madison sidesteps the legal issue that municipalities are not allowed to operate such networks in competition with commercial vendors.

The Madison system covers downtown, which includes the state capitol and the Monona Terrace convention center, along with full access at the Dane County Regional Airport. Expansion is underway to add coverage on the University of Wisconsin-Madison campus, plus surrounding residential and business areas. The Madison system uses hardware manufactured by Cisco Systems.

Atlanta, Georgia

In an announcement made January 25, 2007, the city of Atlanta has selected locally-headquartered Earthlink to build out its municipal wireless network. Pending a final contract, EarthLink's press release says that it will provide affordable, high-speed Internet access for residents, businesses and visitors to Atlanta with upload and download speeds up to 1 Mbps. In addition, efforts will be made to reduce the gap between those who benefit from technology and those who don't by working with the city to provide qualifying residents with discounted Internet access. EarthLink will enable multiple, competing providers, to offer their services to consumers and businesses over its network. For small businesses, Atlanta's wireless network will also provide an alternative for broadband connectivity, such as an affordable wireless T-1 solution.

San Francisco, California

In April 2006, a joint bid by EarthLink and Google to provide San Francisco with a wireless network was accepted. The agreement was finalized just one month ago. Under the joint proposal, free and paid wireless service would be available throughout the city. A 300 kbps free tier of service will be available for use by all residents, businesses and visitors. This 300 kbps tier is adequate for most basic Internet tasks such as web, email and even VoIP. This free tier will be managed by Google, and will be supported by advertising revenue.

A 1 Mbps symmetric service at a price of $21.95 per month for all residents and businesses will be offered, and will not have advertising. With identical upload

and download speeds, this service is promoted as being faster than existing ADSL services, plus it brings the added benefit of nomadic and mobile use. A 1 Mbps service at the discounted rate of $12.95 per month is offered for up to 3,200 qualifying low-income residents.

Philadelphia, Pennsylvania

EarthLink's WiFi network in Philadelphia was completed in early January 2007 and the ISP celebrated with a couple weeks of free service for residents and visitors to try. EarthLink's 15-square-mile proof-of-concept (POC) area extends east of Broad Street and north of the Vine Street Expressway, and is equipped for download and upload speeds up to 1 Mbps. Basic EarthLink WiFi subscriptions are $21.95 a month. Qualifying customers also receive a WiFi modem, which greatly increases the signal strength. EarthLink will provide free WiFi access to Philadelphia residents and visitors in designated free access areas, including Norris Square, Olney, Love Park and the Historic District.

The Philadelphia system was first large-scale municipal wireless Internet access project to be announced, resulting in such things as a Pennsylvania state law prohibiting the city itself from being the system operator. Other states followed suit with similar laws, as noted earlier regarding the Madison, Wis. system.

WiFi Networks in Other Cities

Tempe, Arizona, Brownsburg, Indiana and several Silicon Valley area cities also have operating WiFi networks. Many more are in the planning or bidding stages, making 2007 a big year for "municipal network" wireless Internet access deployment. Industry observers are anxiously awaiting feedback from users, service providers, as well as the municipalities that encouraged and directed network development. Early success will certainly encourage more cities to proceed with their own systems.

At present, it is too soon to see the economic success of such systems, although few analysts see significant problems. The biggest issue may be shareholder disappointment if the revenues under-perform expectations, but this is only a factor at large publicly-held companies such as Earthlink. Clear financial winners are the providers of WiFi network hardware, a group that includes Cisco Systems, Tropos Networks, Siemens and others.

Early concerns from users are as expected: poor coverage in some areas, concern over security of the wireless transmissions, and whether "big brother" will be able to (or want to) capture and use information on user habits and communications content. And there are some legal concerns over individual municipalities franchise agreements with the system builders and operators. Most of these issues sound familiar, having been raised as cellular phone systems were deployed—some of which have not yet been entirely resolved.

The WiMAX Connection

Many promoters of WiMAX have not been directly involved in WiFi networks. Until quite recently, the companies leading the WiMAX efforts have been focused on technology development rather than planning system deployment. This will change rapidly as the number of WiFi networks grows.

Large telecom companies like AT&T see WiFi as a logical stepping stone to the WiMAX networks they really want to see implemented. They may have the same view regarding 3G wireless, which offers a similar type of mobile/portable Internet access. With the long view that the maximum bandwidth is needed for meet future needs, WiMAX is assured to have a strong initial rollout.

Timing is a significant issue with WiMAX. Because WiFi networks are only now being deployed, the early WiMAX trials may have less impact than hoped. The public usually needs to become accustomed to a new service before responding to marketing of another service with greater capabilities.

Then there is the question of customer hardware. How will WiMAX interface to a PC, PDA or all-purpose mobile handset? Consumers have barely been introduced to the concept of handheld video. How long will it take before they will spend the money to upgrade to more capable devices? And how long will it take for prices to come down on new WiMAX-enabled devices?

The Layered Solution

Although not often discussed in these terms, some proposed WiMAX deployments will initially be in support of existing WiFi networks, or perhaps paired with 3G systems. The WiMAX system can double as a backbone to a WiFi network, along with directly supporting WiMAX-specific customers. The most efficient system might have multiple layers of performance (and cost) that suit different groups of users with different bandwidth needs.

The WiFi-WiMAX combination would have a natural inclination toward content-based services like high-speed Internet, audio/video and mobile business network access. The 3G-WiMAX combination would seem to be a follow-on to the voice communication heritage, expanding to video conferencing and entertainment to a highly mobile user. Where the two approaches overlap will likely determine what service model works best.

Final Notes

Large-scale WiFi network deployment is an interesting step in the evolution of wireless communications. The number of users, and the nature of their usage patterns will have a strong influence on following steps in wireless development, which include WiMAX and "full-capability" 3G wireless systems. And beyond that lies the dream of an integrated ultra high speed data "pipe" that can serve everyone's communications needs.