

The Unwire Portland Project

By Matt Lampe

Unwire Portland is the simple name for the effort to establish a wireless cloud of broadband access across the City of Portland, Ore. While it may seem self-explanatory, the name belies the effort of government officials, business people and citizens to achieve this “cloud” with its lofty goals to promote mobility, to provide an affordable bridge to broadband, to provide new connectivity solutions for business and government, and to inspire new businesses, products and services.

Unwire Portland sprang from three roots. First, the volunteer Personal Telco grassroots effort, which was led by technology professionals displaced when the bubble burst, created free hotspots in many areas of Portland. This action led to Portland being named a few years ago as the No. 1 unwired city in America. Second, an economic development strategy developed by the Portland Development Commission found that bandwidth access issues were viewed as critical for future economic growth in surveys and focus groups of the business community. Third, the city, in seeking solutions for bandwidth problems at its remote facilities, carried out early pre-WiMAX testing that demonstrated satisfactory maturing of the technology. Based on these and other factors, the city pulled together representatives for government, education, community, ISP, technology and venture capital who developed the vision for the wireless cloud. This steering committee enlisted the support of Intel, whose largest campus is in the Portland metropolitan region, to provide valuable advice and consultation.

There were and are a multitude of challenges with this project — WiFi mesh technology is just emerging, WiMAX is still in the discussion stages, no one has built a significant urban “cloud” relying on unlicensed spectrum, and there is little experience on which to base penetration rates and other financial and market factors.

The first challenge is finding a business model, perhaps a city utility. Portland operated the public safety radio system (with more than 7,000 subscribers), so it had radio engineers, technicians and towers and was certified as a competitive local exchange carrier (CLEC) to boot.

But even operations limited to other partner governments as a CLEC over its fiber network has drawn a steady barrage of legal challenges. The extension to a model where the city served the general public, with more extensive customer support and provisioning responsibilities and the certainty of additional legal challenges was overwhelming at worst and fraught with delay at best. A privately owned network, with the city and its other stakeholder partners, the Portland Public Schools (PPS) and Tri-Met, as anchor tenants appeared a better match.

As the city of Portland had been a leader in the fight for access to cable networks for competing Internet service providers, open access was an essential component for the business model. The shape of the effort evolved from potentially building a wireless network to a business recruitment/development exercise.

What would prompt the investment of \$12 million to \$30 million in a wireless network, with a commitment to build citywide? No one has built a network covering the mixed terrain and densities of Portland’s 134 square miles, let alone shown that a comparable network can be economically viable.

With a number of cities and counties venturing forward in the wireless space, what would help bring early investment to Portland? The city’s pitch focused on risk reduction for the network operator, addressing three forms of risk: initial cash flow (by being an anchor tenant); time to market (simplifying access to a variety of vertical assets, i.e., street lights, traffic signals, building rooftops and communications towers that would facilitate a rapid deployment); and a ready market (demonstrated by the success of Personal Telco and the demographics with a significant cohort and influx of the 25- to 34-year-old college educated persons).

After receiving the support of the Portland City Council, a request for proposal (RFP) was crafted and published, describing the Portland goals for the effort, the desirable characteristics of the network, the environment and the desired services. The RFP included city, Tri-Met and PPS sites where services were desired, a general outline of the desired standards-based network architecture (WiFi and WiMAX), maps of assets including stakeholder-owned towers, buildings, traffic signal poles and the power poles owned by the local electric utility.

Public benefit approaches were included, leaving significant leeway for the responding companies to address their network, business model, openness approach, offered benefits, desired support from the stakeholders and cost of service plans. While the driver of the RFP is the city’s purchasing of services and offering a bundled access to assets, the evaluation criteria gave substantial weight to public and digital divide benefits, as well as network and service approach and provider capabilities.

The city, with an evaluation committee comprising stakeholders and community volunteers with technical, business, financial and community involvement experience, is in the review process. Six proposals were received from a range of companies, from small local providers to a national ISP with more than \$1 billion in annual revenues.

While all propose a form of WiFi mesh and WiMAX to create the “cloud,” architectures varied. Perhaps this is best illustrated by the variety of mesh nodes, with nodes each containing from 1 to 4 radios depending on the proposer. Expense and revenue models were equally varied, as was experience.

All espoused a willingness to wholesale to other ISPs; but openness varied. At one end of the spectrum is pure wholesale,

with layer 2 handoffs of traffic with the network provider only providing tier 2 support, where the ISP is responsible for customer acquisition, retention, provisioning, billing, and tier 1 support. At the other end is a “dominant provider” model that will provide wholesale at layer 2, but prefers to work at layer 3, coordinating the IP address space for the network, providing the outbound Internet access, assuring the provisioning, and offering tier 1 support if desired by the ISP, in addition to tier 2. Both are far more open than the cable network; each has pluses and minuses for the ISPs that wish to market the “cloud.” As of press time, the evaluation committee is scheduling interviews with three responder teams.

If all goes well, how will Portland change 18 months from now?

- Residents can get wireless broadband in their homes, with a customer premise equipment device, for about \$20 per month
- City smart parking meters will connect via WiFi, with speed to support real-time authorization, saving the city more than \$500,000 between access and credit card transaction fees.
- Everyone will have free WiFi access to important civic, educational and social service information throughout the community.
- Laptop users can access the Internet from almost any outside location in the city and in many buildings with ease; free service would be available in many places, although its speed and duration may be limited.
- Low-income families will have the ability to obtain broadband service at prices that approach today’s dial-up service plans.
- Businesses whose locations today limit broadband options will have a choice of low-cost, WiFi-based service or higher quality and capacity WiMAX-based service wherever they are located in Portland.
- Schools will have saved scarce dollars while providing a redundant path for their critical Internet and VoIP delivery.

- Firefighters in scattered stations will spend less time on “e-paperwork” and have faster access to inspection data and building-specific fire suppression plans.
- Light rail riders in three counties will have WiFi access on their commutes.
- Portland’s police vehicles will have high-speed access to support and be able to file reports, receive mug shots and access data in the field.
- Portland’s technology companies will have a “living laboratory” to test new software and services that cater to the mobile user.



No one sees Unwire Portland as a panacea; as the demand for higher and higher bandwidth grows, wireless technologies cannot be expected to support the range of video and entertainment models. However, the Unwire Portland Project can have very significant positive impacts on the community, and these benefits will continue to grow as the technology advances in wireless.

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