

Wi-Fi for All

2006 update

Free Wi-Fi service for entire municipalities could reduce taxes while balancing municipal budgets and providing consumer convenience. What? It could happen.

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Wi-Fi is a network access technology that has taken the world by storm. From home to enterprise and public access, the Wi-Fi phenomenon is growing at impressive rates. But demand is only impressive if revenues follow, and so far a winning business model for Wi-Fi has yet to emerge.

The Quest for Wi-Fi Revenues

Wi-Fi, a.k.a. wireless local area networking (WLAN), offers local data network access and data transfer speeds of 54 Mbps and higher. Home users can share a single broadband connection among several computers anywhere in the house or surrounding area up to about 300 feet. Much like cordless phones freed us to move about the house and yard with voice access, Wi-Fi offers mobility around the home for Internet browsing, file sharing and entertainment.

In growing numbers, WiMAX mesh technologies are now blanketing entire municipalities with wireless data access. This new model sidesteps the bandwidth bottleneck imposed by current home Wi-Fi with DSL backhaul models by providing wireless data speed all the way to the local point of presence (POP). It also makes for some interesting implications on who will make money with Wi-Fi technology and how. Who will the new "operator" actually be? How will consumer demand for free wireless data services drive operator revenues higher? How will subscriber segmentation be redefined?

Background

Worldwide revenues for equipment used in wireless local area network—the wireless Ethernet—rose 15% to \$2.8 billion in 2004, helped in part by drastic cutbacks in prices, according to a report from Infonetics Research. Fierce competition for market share led to 21% price cuts for wireless broadband equipment that year, and Infonetics analyst Richard Webb projects that “this downward price trend will only continue in coming years. As is the case in all technologies that rapidly commoditize, price and profits shrink.

As of mid-2005, Wi-Fi shipments cooled a bit, yet Wi-Fi aggregators continue to facilitate roaming for road warriors, who can also find Wi-Fi free, or at very low cost, at thousands of retail businesses and now in hundreds of municipalities.

In-Stat Survey findings reveal that neither cellular data users (3G) nor Wi-Fi data users are satisfied with the cost, coverage, or speeds of their respective services. Further, both groups exhibited a strong disinclination to pay for a service that would address their dissatisfactions.

In April 2006, Motorola announced that the City of San Francisco would begin contract negotiations with EarthLink and Google to create a widely available wireless broadband network across the city that will be free to residents and visitors. EarthLink and Google are working with wireless equipment suppliers Motorola and Tropos Networks to construct a mobile network for residents, businesses, municipal government and visitors. Google said it plans to offer free wireless access supported by advertising. EarthLink will offer services aimed at business users and to support local government activities. EarthLink also has been selected to build a municipal Wi-Fi network for the city of Philadelphia, and more recently, for Milpitas, Calif. in Silicon Valley.

While the trend for municipal networks has been growing steadily over the past several years, their ad supported revenue models produce intrusive and often irritating forced content that is pushed to the user. And the jury's still out on the question of value to the advertisers, upon which the entire model is dependent.

The Premise

This white paper presents a new model for the consumer Wi-Fi marketplace. This model relies on an *indirect* revenue stream that is solely supported neither by advertising nor by charging directly for the connections themselves. Our model also eliminates the need for a terrestrial broadband or satellite connection at the user site. With this model we believe that:

1. More revenue per bandwidth unit is achievable
2. Revenues will increase rather than decrease over time
3. Operator costs will be minimized
4. New types of operators will emerge

The Wi-Fi Gold Mine

Public Wi-Fi access has driven awareness of the wireless data revolution, with the iconic café cyber surfer in the starring role.

From Starbucks and McDonald's to Barnes & Noble, -- and now entire municipalities -- Wi-Fi has provided more of a customer convenience than a provider revenue stream.

Low deployment cost makes Wi-Fi very attractive to carriers for small(er) footprint wireless data applications, in contrast to 3G (third generation wireless) technologies whose infrastructure can cost millions or even billions to implement on a national scale. In 2003, Verizon's wireline operations Introduced WiMAX service in New York City from its array of payphones — for free — to its DSL subscribers. Verizon believes that reduced churn, not enhanced revenues, should support the expense of the rollout. But according to John Blau, IDG News Service, even though the number of hotspots offering public access to wireless broadband networks continues to rise sharply, executives from major vendors and mobile operators view the technology as playing a much larger role in the home and office.

A recent survey published by independent think tank Pew Internet & American Life Project, found that high-speed Internet adoption, after growing quickly in the past several years, has been losing steam and is poised to slow even further. During the first six months of 2005, 53 percent of home Internet users said they use a broadband connection, up from only 50 percent during the previous six months.

This is a much slower growth rate than reported for the same periods a year earlier. From November 2003 to May 2004, high-speed Internet penetration grew by 20 percent, from 35 percent of home users in December 2003 to 42 percent in May 2004, according to the Pew data.

The implication is that broadband penetration is peaking. We believe that price is the major barrier to increased penetration. And once that barrier is broken with "free" broadband service, there will be increased

market opportunity to connect up to 100% of home Internet users to broadband, wireline or wireless.

We believe that the real Wi-Fi gold mine will be found not by charging directly for the service itself. Rather, our scenario suggests Wi-Fi and WiMAX service providing a free portal to home users that facilitates the lifestyle of the on-line shopper. With our proposed model, consumers would receive wireless access as a value-added benefit of their on-line spending power. Access to Wi-Fi or other broadband technologies could be supported entirely by skimming a small percentage of on-line consumer spending through operator-owned portals.

A Threat to Wired Broadband?

Since Wi-Fi doesn't make much sense if confined to a 56K connection out the door, the Wi-Fi-at-home market is largely defined by homes with broadband connections. These broadband connections are dominated by xDSL, satellite and cable modem backhaul solutions, with DSL in the lead. Providers charge direct access fees for these connections ranging from \$10 to \$50 per month. But even current broadband connections offering speeds of 128k to 1.5 Mbps tend to bottleneck the 54 Mbps+ access speeds of Wi-Fi.

Why not open it up to a neighborhood Wi-Fi thoroughbred model, complete with wireless backhaul to a local POP? Or a WiMAX mesh blanketing the entire municipality? This kind of network coupled with the operator portal revenue model could help balance municipal budgets with a free municipal wireless data network skimming a percentage of local on-line purchases to support operations and contribute to the community chest.

Value Perspective

Like granite carved by water, even the largest of institutions will eventually yield to consumer demand. If consumers don't want to pay for broadband and someone invents a successful business model to deliver it for free, Darwinian logic prevails. This doesn't mean that operators must lose money. On the contrary, it is an unprecedented opportunity for operators to increase revenues and decrease costs, all by simply upgrading tools and strategies that have served them for generations. Instead of fishing with a thousand hooks, use a net. Own entire neighborhoods or municipalities instead of individual subscribers. Just like

cable TV. The question begs: Who will become the "operator?"

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The Fading Voice of Wireline

Consumers have been conditioned to expect technology and communications services to commoditize, resulting in decreased costs, until they cost next to nothing or become value-add features in other offerings. History promises that the future will not disappoint. A clear sign lies in the declining revenues experienced by the wireline voice services market. According to In-Stat/MDR, the total long distance voice market experienced double-digit decreases in 2003 and 2004 in part due to free long distance; nights and weekends offered by wireless voice carriers. The local market, while overall not as competitive as long distance, will see revenue declines of 4-6% over the next several years. This trend signals a disruption in traditional communications service business models and screams for innovative thinking. Voice Over IP (VOIP) adoption is now increasing at a blistering pace, further eroding traditional telephone service revenues.

Online Shopping in Hyperdrive

During November 2003, shoppers spent 55 percent more money online than they did in the same period a year earlier, accounting for some \$8.5 billion, as revealed by a collaborative report from Goldman, Sachs & Co., Harris Interactive and Nielsen/NetRatings (cited in a cyberatlas article by Robyn Greenspan). Among the most popular items were videos and DVDs, books, music, and toys and video games (hardware and software).

Continuing this burgeoning trend, Holiday shoppers spent more online in 2005 than they did in 2004, continuing to steadily steal market share from brick-and-mortar shops, according to a the latest report by Goldman Sachs, Nielsen/NetRatings, and Harris Interactive.

Holiday shoppers in the U.S. spent \$30.1 billion from late October until December 23, 2005, a 30 percent increase over the 2004 holiday season, according to the report, which surveyed 8,600 shoppers in the U.S. Online spending made up 27 percent of total spending during the holidays, up from 16 percent four years ago.

Transparent Access

Ask broadband access customers about their DSL service, and they'll tell you what it costs (the access speed advantage tends to be less impressive as time wears on). Ask about what they bought over the Internet and they'll excitedly tell you about the web site they discovered where they found items and how much they saved or how convenient it was. It is this empowerment, near-instant gratification and the further democratization of goods made possible by online shopping that provides the basis for our model.

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If Internet access providers are to deliver acceptable, sustainable margins, they must shift their perspective to the value paradigm of their customers. Though users may not want to pay for access, they certainly don't mind paying for the goods and services they get through access. That's why it's called access and not end-all.

Carriers' entry into the public hotspot market remains riddled with uncertainty that may challenge a number of proposed and operational business models. Back hauling

WLAN traffic is a bottleneck — WLANs can theoretically handle at least 54 Mbps but T1 lines offer only 1.5 Mbps speeds — and ongoing operating costs add nothing but disincentive. Some analysts posit that the pace of subscriber adoption is likely to dictate the success or failure of carrier strategies. We see adoption as only one dimension. The business and technology models of operators must conform to

consumer attitudes and behavior, not the other way around.

A New Business Model for Wi-Fi

Pea Pod had the right idea, but lagging early adoption and a series of acquisitions has made for slow growth. With the right relationships in place, Pea Pod and other portals such as quixtar.com could help to provide free broadband access via Wi-Fi and boost their sales at the same time.

Here's how:

The Technology Model

Wi-Fi relies upon broadband technology that bottlenecks its bandwidth benefits. Technologies such as point-to-point wireless and LMDS (local multipoint distribution) offer backhaul solutions that open up more Wi-Fi bandwidth to Internet access. When servicing a neighborhood of users, these backhaul solutions become very efficient.

More access bandwidth opens a new universe of video on demand, VoIP, video conferencing and more.

Fig. 1

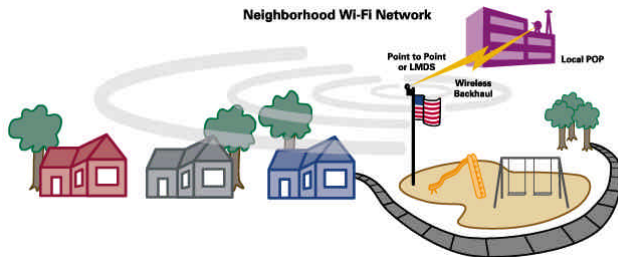


Fig. 1 (above) depicts a typical pure wireless access neighborhood network. Residents have wireless capabilities in their computers. This network uses a central 802.11X access point to blanket a neighborhood or section thereof. Neighborhood traffic is aggregated and managed via a co-located gateway and point-to-point duplex wireless unit that back hauls the traffic to the nearest operator point of presence (POP). Users are provisioned for access, bandwidth, privileges and security.

The Business Model

The value proposition to the neighborhood users is based on free wireless Internet access under two conditions: First, that a forced home page is acceptable to the user. This home page would include a frame from a portal through which all things consumable and durable may be purchased. All ordered goods would be delivered to the consumer's doorstep in a single shipment. This portal page is controlled by the network operator or branded distributor.

Secondly, subscribers must agree to divert a minimum dollar amount of their regular monthly shopping budget through the portal. The operator would form a marketing partnership with several shopping portals to deploy a custom portal, skimming a "distributor's margin" from each sale. This model reserves a piece of the "Gross

Neighborhood Product" (GnP) as a revenue stream for the operator. If subscribers fall below the minimum established monthly portal orders, they pay either a set or prorated access fee for that month.

Fig. 2



Marketing Revenue

If one considers the number of consumable household products and services that could be put on regular order that would simply show up at the door (paper products, canned goods, coffee, detergents, clothing, dry cleaning, etc.; on-line products and services, such as music and entertainment, occasional durable items such as accent furniture, big screen TVs, DVDs, videos and paintball accessories for your 13-year-old) it's not hard to top \$200-\$300 per month in gross portal per connection revenue. If the operator takes a percentage off the top of every sale, in lieu of a distribution or retail margin, a steady revenue stream results from free access.

Airline miles, points or other incentives can be piled on top to sweeten the deal and garner more share of wallet from consumers over time. In this way, revenues actually would increase over time, rather than decrease as in the typical technology pricing lifecycle.

Advertising Revenue

Revenue from on-line advertising can also be thrown into the equation. The portal can generate revenues from banner advertising

and/or paid search engine services within the sites. Specific demographic targeting information that is valuable to advertisers and not widely available on the web would be available as a bi-product of the neighborhood aspect of this model.

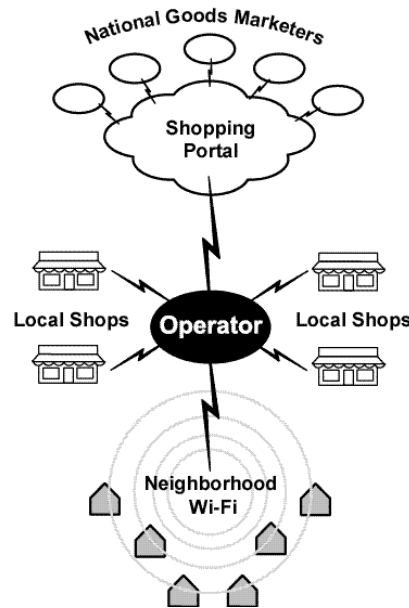
Localizing the World Wide Web

Global aspects of the Internet have overshadowed a mother lode of untapped local revenue opportunities. Local businesses can use the Internet as an effective marketing and sales tool when channeled by neighborhood-focused portals, such as the one proposed. In our proposed model, a localized Internet community is created with neighborhood news, garage sales; events lost pets and babysitting at the forefront. The brand relationship of the portal with the neighborhood is strengthened by such a local demographic and psychographic connection. What's more, local merchants, such as pizza parlors, dry cleaners, grocers and others might see great value in paying a transaction fee for links that automatically route email or fax orders from the neighborhood network subscribers to their shops. And don't forget about the possibilities created with greater bandwidth -- video, multimedia, video telephony (video chatrooms?). Operators could offer a fractional percentage of the local transaction proceeds to neighborhood association for hosting the platform. Associations are always on the lookout for ways to save or raise money to offset community expenses and improvements.

Local weather, time, temp and all the usual geospecific information could easily be customized on the portal frame as well via

agreements with yet other third party vendors. The possibilities are endless.

In time, operator revenues may well surpass those possible from traditional subscription models. And from the consumer perspective, it's all free.



Who's the Operator?

The biggest question in this entire scenario remains: What is the definition of the "operator." Carriers such as SBC, Bell South or Sprint? Portal owners the likes of Yahoo or Google? Neighborhood web site farms? Local ISPs? Local municipalities? The neighborhood associations themselves? The opportunity is there for any of these to seize.

Local and national advertising and marketing sales organizations may be necessary to support this

model – local reps to call on the pizza parlor, to sell banner ads and negotiate geographic zones for communities. Does this sound like Donnelly territory? Or is there a new, grass roots network of community sales reps on the cusp?

Admittedly, this proposition presents an ambitious departure from traditional access models, but the fact bears repeating that the consumer creates the world as we know it. Above all, one thing seems inevitable: Eventually, access will be democratized to a point of total ubiquity. At this point, one wonders, will the landscape resemble today's direct charge-for-access model? Or will access be packaged as an essential and inseparable component of commerce?