Wireless 'Hot Spots' Heat Up

Abstract: The market for public, Internet-connected wireless LANS is growing rapidly. Internet service providers should develop products and marketing plans targeted at “hot spot” operators.

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Recommendations

- Internet service providers (ISPs) must develop a strategy for taking advantage of the Wi-Fi, also known as Wireless Fidelity, market, either by becoming “hot spot” aggregators or developing partnerships with aggregators.

- ISPs and carriers should develop products and marketing plans targeted at hot-spot operators.

- ISPs should avoid directly investing in the building of hot-spot infrastructure, unless another partner shares the financial burden and risks.
What Is a Hot Spot?

The market for mobile Internet access has grown explosively. Consumers increasingly want to connect to the Internet from whatever location they’re at, via a laptop PC or a PDA.

This has led to a market for wireless hot spots — wireless LANs (WLANs) with a connection to the Internet. Gartner Dataquest forecasts that by 2007, the market for public hot spots will be worth more than $9 billion and that more than 35 million users will utilize nearly 160,000 hot spots worldwide (see "Public Wireless LAN Hot Spots: Worldwide Trends and Forecast," TELC-WW-EX-0393).

Hot spots are based on, at minimum, the 802.11b standard (Wi-Fi). Users who have a device that is 802.11b-capable can connect to the network simply by having their device search for a wireless signal. The network operator can configure the network so that a user must authenticate before using the network, thus allowing the operator to track who is connected and to bill users for time spent utilizing the network.

Commercial hot spots are being set up in locations where potential users typically gather. T-Mobile, for instance, has signed two significant deals to provide wireless hot spots: T-Mobile is connecting Starbucks coffee shops and Borders bookstores and cafes through its "T-Mobile HotSpot" service. Individual coffee shop owners also are setting up hot spots in their stores, some of them independently, and others through wireless aggregators such as Boingo.

Furthermore, some individuals offer wireless access for free, allowing open access to their Internet connections without any authentication required. The locations of these free hot spots is sometimes disclosed through the practice of "war chalking" — marking the nearby walls or sidewalk with a symbol to indicate the presence of wireless connectivity. War chalking is not, however, a widespread practice, and consequently, free wireless access is more likely to be a matter of serendipitous discovery. The industry is, however, moving toward creating an easily identified sign. Gartner Dataquest believes that by 2005, 10 percent of broadband Internet access will be through public or campus WLAN hot spots (0.7 probability).

Service Provider Roles

A value chain for hot spots is detailed in "The Wireless 'Hot Spot' Value Chain," COM-17-6358. For ISPs, the following are three major roles of potential interest, covering one or more portions of the value chain:

- Traditional ISP — The service provider sells an Internet connection and possibly associated services to the hot-spot operator.

- WLAN provider, also known as a wireless ISP (WISP) — The service provider builds and operates WLAN infrastructure, including owning the equipment.
WLAN aggregator — This is a customer service-oriented role. The aggregator does not own any network infrastructure. Instead, the aggregator provides software that handles authentication and billing and does the customer service, on behalf of an individual hot spot or WISP.

**Role of Traditional ISP**

In a typical wireless hot-spot deal, an ISP sells an Internet connection to a hot-spot operator, together with a written agreement that the operator is permitted to resell that connectivity. Typically, this connection is a DSL line; more heavily utilized WLANs, such as those within a major hotel, may have T1 connectivity. This is an unusual arrangement; when ISPs wholesale, the connections are typically T1 or above. However, for a small cafe, DSL connection may be all that's needed and may be the only way to cost-effectively provide wireless access. Consequently, ISPs should make sure they have a customer contract that covers this kind of limited-resale scenario for DSL services.

Today, most hot-spot operators simply go out and sign an Internet service contract with whatever ISP meets their criteria. However, a significant opportunity exists for ISPs, especially carriers, to partner with wireless aggregators as a "preferred" ISP. Aggregators do not generally recommend a specific partner ISP to their operators, but some provide architectural consulting services and, in the course of doing so, may recommend an ISP to the operator. Consequently, the playing field is open for potential partnerships between noncarrier aggregators and ISPs.

"Legitimate" hot spots of this type — in which a resale contract exists between the ISP and the operator — are beneficial to the ISP and create an opportunity to more deeply penetrate the business Internet access market. ISPs must, however, ensure that hot-spot operators actually enter into resale contracts — not their standard business Internet access contracts.

More worrisome, however, are free hot spots, operated by individuals who do not have a resale contract with the ISP, and, indeed, usually have consumer broadband connectivity intended for personal use. These "rogue" hot spots do not require authentication from users. Some may simply be the result of misconfigured devices, in which the user intended to set up a private home network but neglected to turn on any security features. Others are deliberate, set up by altruistic individuals who want to invite others to use their Internet connectivity. Both create the same problem — unauthorized use of the ISP's network. They create the specter of roving computer criminals, moving from open wireless network to open wireless network, using their untracked mobile devices as a platform from which to launch attacks on other systems. More prosaically, these unauthorized hot spots also have utilization patterns that are higher than normal consumer broadband connections.

While ISPs must take care to amend their user service agreements to forbid open hot spots, enforcement of these agreements is difficult (possible future solutions to the issue of rogue hot spots are explored in "The Wireless 'Napsterization' of Broadband Access," SPA-18-0598).
Role of WLAN Provider
WLAN providers build, own and operate networks of hot spots. They are one category of WISP. They should be carefully distinguished from WISPs such as Airband, which sells enterprise-class Internet access. This latter category of WISP "lights" a building by connecting to it via fixed wireless technology and then sells Internet access to the building’s tenants. WLAN providers, on the other hand, usually get Internet access for the hot spot through a "traditional" access technology, such as DSL, or a point-to-point circuit and operate 802.11-based WLAN equipment. These companies usually target locations that would be of interest to business travelers, such as airports, hotels and convention centers.

WLANs are a capital-intensive business. There is an upfront cost for the installation of the network equipment as well as a monthly recurring cost for the location’s Internet connection. Though companies, such as Wayport, were initially in the business of a large-scale build-out of hot spots, virtually all such companies either scaled back their plans or stopped building infrastructure when the venture capital market dried up. However, a new generation of companies has begun to build out hot-spot infrastructure. Most of these companies are carriers, such as T-Mobile, which are building out infrastructure for their own use. However, others are again trying to pursue a wholesale aggregator model. For example, Cometa Networks was founded in late 2002 and is funded by AT&T, IBM, Intel and others. Cometa aims to build out WLANs across the United States, which it will then resell on a wholesale basis, but Cometa is likely to be subject to the same difficulties that plagued earlier entrants in this business.

Role of WLAN Aggregator
Because building out hot spots is such a capital-intensive endeavor — though inexpensive compared with other wireless technologies — the trend has been toward hot-spot owners paying for the network equipment as well as the cost of Internet connectivity. The typical hot-spot owner, however, does not want to have to manage the wireless Internet access service. Thus, significant market opportunity exists for hot-spot aggregators.

At minimum, aggregators offer roaming between hot-spot operators, billing and security. Some aggregators, such as Boingo, are Wi-Fi specialists, while others, such as GRIC Communications and iPass, are traditional aggregators of remote access.

Some aggregators, such as FatPort and Pronto Networks, offer a turnkey hot-spot service. They assist location owners with obtaining Internet connectivity and installing a wireless access point and management device. The management device takes care of customer sign-ups, authentication, billing and potentially other functions, such as caching, bandwidth shaping and security (virtual private network [VPN], encryption); it might be an appliance or software loaded onto a PC. The
aggregator handles customer service, remotely manages the hardware and may also manage the Internet connection.

Aggregators generally require that the service be cobranded with the location owner. Users can sign up with an aggregator directly. The revenue is normally shared between the aggregator and the location that a user connects from; the aggregator bills the end user and then pays the location owner its share of the revenue. The aggregator may also pay the location owner a bounty for each new customer sign-up from its location, either as a one-time bonus or as an ongoing percentage of all revenue that the customer generates for a certain period of time. Airpath is one of the exceptions: It does not require cobranding, and it does not have a revenue-sharing model; instead, it charges the location owner a flat fee each month as well as a flat fee per unique user logged in from that location during that month.

Wireless aggregators are still experimenting with pricing models. Users typically pay by the "connect day," by the "connection" or by the minute. A "connect day" is a 24-hour period during which the service may be used for the unmetered fee. A "connection" is a more arbitrary time period during which the service may be used for the unmetered fee; in the case of Wayport, a "connection" lasts until midnight in airports or the next check-in time in hotels. Typical pricing schemes include the purchase of individual connect days, subscriptions for a certain number of connect days per month, a monthly flat-rate unlimited-access subscription and prepaid access for a certain number of connect days or minutes. T-Mobile, for instance, offers 10-cents-per-minute pay-as-you-go access or $30-per-month unlimited access on a year's subscription. Boingo's service plans include $7.95-per-connect-day pay-as-you-go access and $24.95-per-month access that includes 10 connect days as well as additional connect days for $4.95 each. Wayport's service plans include prepaid connection cards, beginning at $25 for three connections and ending at $100 for 20 connections. Many aggregators also offer corporate pricing plans.

Wireless aggregators may themselves be a private-label service for traditional ISPs. For instance, Earthlink's Wi-Fi service utilizes Boingo in a cobranding arrangement. Wireless aggregators may also be aggregators of other remote access service; for example, GRIC and iPass have entered the wireless aggregation business.

Gartner Dataquest Perspective

Gartner Dataquest believes that, ultimately, wireless aggregators will be absorbed by carriers, or, less likely but still possible, by ISPs. Carriers have already begun to acquire wireless aggregators. However, carriers will not be interested in acquiring hot-spot operators until the hot-spot networks have reached significant size.

Most wireless aggregators do not have a preferred provider for Internet connectivity into the hot spots; thus, this could be a valuable channel sales relationship. ISPs and the ISP/data divisions of carriers must develop
appropriate products for this market — variants of traditional Internet access, VPNs and security services. These must be priced at a level that allow hot-spot operators to turn a profit, but they must not be discounted so heavily that the ISP is not being paid appropriately for the amount of bandwidth used. Also, the ISP needs an appropriate reseller agreement and may wish to tailor a service-level agreement (SLA) appropriate for hot spots.

ISPs should strongly consider entering into private-label or cobranding relationships with wireless aggregators. While ISPs can expect to see some incremental revenue from Wi-Fi access, this is not an immediate large revenue opportunity. Although the Wi-Fi market is still small, ISPs should not lose the opportunity to ensure that consumers always connect to Internet access under their brand, regardless of whether the access is via broadband, narrowband or Wi-Fi. Furthermore, for ISPs whose key business is business remote access, they must examine the hot-spot market closely; if branding image to business customers is important, the ISP should consider becoming a hot-spot service reseller. Gartner Dataquest predicts that through 2005, hot-spot revenue will come primarily from business users.

Mobile carriers are investing in building out WLANs, and fixed wireline carriers also are beginning to exhibit interest. Some are doing so in conjunction with a partner that has wide reach and is willing to bear part of the cost. Reasonable partnership opportunities for carriers include major hotel chains, bookstore chains, coffee shop chains and other chain food retailers with a community focus. However, carriers should be aware that this is capital-intensive, and investment in equipment may have limited long-term return, given the falling prices of Wi-Fi equipment and the rapid advances in Wi-Fi technology. Furthermore, consumer adoption of this technology is slow. Carriers may, however, be better positioned to market Wi-Fi access to the corporate market, for business travelers; a partnership with a wireless aggregator may prove fruitful for both.

**Key Issue**

How will opportunities in the public network service market be affected by competition, technology and evolving user requirements?