



## An Overview of Wi-Fi “Hotspot” Pricing Models

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### 1. Introduction

Over the past twelve months, activity and interest in the market for Wi-Fi “hotspots” has reached a fevered pitch. Since 1999, at least \$1.6 billion<sup>1</sup> in funding has flowed to Wi-Fi start-ups. Sales of Wi-Fi equipment will grow 33% this year, to \$1.67 billion.<sup>2</sup> Intel has created a \$300 million venture fund to focus exclusively on developing Wi-Fi technologies in an effort to bolster the availability of products and services for their new Centrino line of laptops. In addition to venture capital investments in start-up companies, the incumbent wireline and wireless carriers are making significant investments in either building out their own Wi-Fi networks or are cutting deals with hotspot operators. There will be 21,000 hotspots in the United States and 45,000 globally by the end of 2004, according to Pyramid Research.<sup>3</sup>

The market for Wi-Fi access is growing quickly but is also highly fragmented. Many companies have announced strategies for providing Wi-Fi access, and thousands of individuals and small-businesses are creating their own hotspots. There are a dizzying array of companies that are in the business of providing some sort of Wi-Fi access point. The Wi-Fi hotspot value chain includes everything from billing and support services, back-haul networks and VPN operators.<sup>4</sup> This paper will provide an overview of this space from the perspective of a Wi-Fi hotspot consumer. Specifically, we will discuss who the major hotspot operators are and what pricing options they each employ. From there we will look at the underlying strategies of these players, and analyze their competitive position and outlook for future growth. Finally, we will shed some light on the future of Wi-Fi hotspot business models and the opportunities that may lie therein.

With over 12 million Wi-Fi users worldwide in 2003, and with 707 million expected users in 2008,<sup>5</sup> it is clear that there is significant growth potential in the market for Wi-Fi hotspots. The question remains, where will this growth be concentrated?

### 2. Segment Analysis

There are many ways in which a company can offer Wi-Fi services to their customers, with the two primary means consisting of building out a network from scratch or partnering with other operators to offer Wi-Fi service in their location(s). The market for Wi-Fi hotspot access can be classified into four different groups: dedicated hotspot operators and aggregators, incumbent landline carriers, cellular telephone operators, and independent hotspot owners. Each group has a different strategy for deploying their networks, and each company within each group has different goals in providing services to Wi-Fi customers.

#### 2.1. Dedicated Hotspot Operators and Aggregators

##### A. Wayport

Business travelers have become increasingly familiar with the Wayport brand name. Since 1996, Wayport has been providing internet access in hotels and airports. The company’s primary



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service has been providing broadband internet in hotel rooms, and charging guests on their hotel bill. Wayport’s service has been providing guests with a much faster experience than their dial-up VPN or AOL account.

Wayport’s Wi-Fi service offers their customers numerous pricing options, which are available either in a prepaid, subscription, or “on-the-spot” signup process. Most travelers are used to seeing Wayport in hotel rooms, offering broadband access for \$9.95 with an Ethernet card and cable. With a Wi-Fi connection, similar to the broadband access, a user simply starts their computer and opens their browser application. The Wayport network displays the Wayport homepage only, and prompts the user to sign-up for one connection. In most hotels, the customer’s bill is charged, while in other venues like airports or other public spaces, a credit card would be required.

Wayport	Pricing	Details
Single hotel connection	\$9.95	Valid until midnight from time of purchase
Single airport connection	\$6.95	Valid until midnight from time of purchase
Prepaid Connection Cards	\$25	3 connections, each valid until midnight
	\$50	8 connections, each valid until midnight
	\$100	20 connections, each valid until midnight
Corporate membership	\$19.95 / month	For 50 or more employees
Annual membership	\$29.95 / month	With annual contract
Month-to-month membership	\$49.95 / month	No contract

Source: Company website and Gartner Research

Recently, Wayport has been leveraging their relationships with the hotels and airports within which they currently operate broadband access points to build out their hotspot footprint. This allows Wayport to augment their wired internet access services in private spaces (hotel rooms) with wireless access in public spaces (lobbies, conference rooms, etc...).

In addition to the direct-to-consumer business, Wayport is beginning to cater to other carriers wishing to operate their own Wi-Fi networks. Because Wayport had first mover advantage into prime hotel and airport locations, they have become a primary partner for numerous operators. Most major carriers (wireline and wireless) have signed agreements with Wayport to provide Wi-Fi access where they haven’t built out their own locations, or where Wayport is the sole, dominant provider (like an airport).

Wayport’s established footprint in high-traffic areas for business travelers has given them an amount of leverage that other hotspot operators have yet to match. Many agreements are structured such that Wayport can be the only Wi-Fi provider in certain locations, making them a company that other Wi-Fi aspirants must sign partnerships with. Carriers that have signed agreements with Wayport include Verizon, SBC, AT&T Wireless, Sprint, and Boingo. These roaming agreements give the carriers access to Wi-Fi in hotels and airports, but not Wayport’s broadband hotel access in guest or meeting rooms.

We've shown that Wayport's relationships with major hotels and airports give it significant leverage in dealing with other carriers and operators. As Wayport's network expands, its value increases to end-users, as does its value to partners. There's no denying the traffic the company is generating: they are currently tracking at 170,000 connections per month in 600 hotels.<sup>6</sup> The company must now make steps to either continue the buildout of their own hotspots or aggressively sign roaming deals with other operators to ensure they can maintain the widest coverage area possible.

## B. Boingo Wireless

Boingo Wireless is a pioneer in the area of Wi-Fi roaming, which is critical since it does not own any hotspots itself. Boingo has established roaming agreements with operators of over 5,000 hotspots around the world,<sup>7</sup> which provides its users a relatively seamless means of finding a Wi-Fi connection anywhere they go. Boingo is one of the first companies to establish such a large footprint for their Wi-Fi subscribers, and is thus well positioned to sign-up customers who travel to a number of locations.

Boingo's pricing model is very simple. A customer can purchase either a 2 "connect day" pass for \$7.95 or can sign up for an annual contract for unlimited surfing at \$39.95 per month. However, Boingo is currently offering a special of \$21.95 per month for the first year to new subscribers.

Boingo	Pricing	Details
Boingo As-You-Go	\$7.95	Two "Connect Days"
Boingo Unlimited	\$39.95 / month	With annual contract
Sessions (Enterprise Customers)	\$2.38 to \$1.92 per connect	Connection valid for 24 hours, plus \$4.70 to \$3.47 for per-verage session

*Source: Company Website and Gartner Research*

The key to Boingo's success is the free Wi-Fi access software the company provides. Any user can download the Wi-Fi "finder" utility from the company website, which provides a list of available hotspots including both the free, independent operators and Boingo's roaming partners. Only paying customers to the Boingo service, however, can access sites that are Boingo roaming partners. But the ease with which a non-subscriber can use this utility and easily find hotspots makes it a great marketing tool for Boingo, giving customers a taste of where they might be able to use the Boingo service if they became a subscriber.

Boingo's business model is based on the proliferation of Wi-Fi access and hotspots, and their future is tied to their ability to sign roaming agreements to expand their footprint and add subscribers. The company is making new efforts to develop relationships with business that have large numbers of traveling employees to provide Wi-Fi access in a secured manner at their hotspot locations. Boingo is hoping to lock-in longer-term contracts and revenue streams with these relationships. In addition, the company is signing contracts with companies like Earthlink to provide a Wi-Fi access utility for their dial-up customers. In this scenario, Boingo develops a branded version of their access utility for their partner's customers, thus providing a simplified experience for the end-customer and yielding ownership of that relationship to the partner.



Boingo's efforts at signing up over 5,000 hotspot locations around the world are giving it a significant selling point when approaching new partners and businesses. Boingo's relationship with Wayport gives them access to the premier travel locations in hotels and airports, and their relationships with independent operators also provides the scale necessary to offer access in more locations than most hotspot operators.

Boingo's primary limitation will be in developing mass-market adoption of their service. If they can be successful within the co-branded and B2B arenas, this becomes less of an issue. But to the extent that consumer adoption is critical to their survival, Boingo will need to aggressively pursue partnerships with those companies that already own the customer relationships. As we'll point out later on in this report, the landline and wireless carriers are pursuing the Wi-Fi customer as well, which could leave Boingo out of the game if they cannot win the traditional telco customer. However, their large footprint gives them the edge in this era of early adoption.

## **2.2. Incumbent Wireline Carriers**

The landline carriers, specifically Verizon and SBC, are deploying hotspots in an effort to generate revenues and stem the tide of customer defections to wireless voice carriers. By offering hotspots either in a stand-alone or bundled fashion, incumbent carriers can further develop their customer relationships and drive incremental revenue while decreasing churn. Verizon and SBC both have cellular telephone subsidiaries (Verizon Wireless and Cingular Wireless, respectively), and both carriers are beginning to articulate their plans on how they expect to integrate their various data plans across their companies. With large installed bases of residential and long-distance customers, Verizon and SBC have an opportunity to make a big splash in the market for Wi-Fi hotspots.

### **A. Verizon Communications**

Verizon Communications announced in May 2003 their intention to turn 1000 public access telephones in New York City into Wi-Fi hotspots. Currently, in order to access the Verizon Wi-Fi network in New York, a customer must be a Verizon DSL subscriber. Verizon DSL pricing is currently \$29.95 for new subscribers (a \$5 discount). Verizon is very clear on their website that you must be a Verizon DSL customer to access their Wi-Fi access points throughout New York City.

Verizon's \$4-\$6 million investment<sup>8</sup> in Wi-Fi hotspots in New York City is not an attempt to drive incremental revenue to the company. Verizon is instead trying to bolster its DSL subscription base by offering a value-added service to their current customers. This investment will allow Verizon to decrease DSL customer churn and enhance their experience with Verizon overall. The competition for DSL customers, especially in the densely-populated Northeast, is causing operators to rethink what kind of value they can offer their customers. Specifically, cable companies like Cox, Comcast and Time Warner are encroaching on Verizon's customers. Verizon has stated that it needs 3 million subscribers to reach profitability in their DSL business,<sup>9</sup> a significant increase from the 2.1 million subscribers they reported in October 2003.<sup>10</sup> Offering free Wi-Fi access to these customers is one more carrot in the race to sign-up more users than their rivals.



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Verizon’s aggressive foray into the Wi-Fi market is a sign of things to come in terms of commoditizing and bundling the Wi-Fi experience.<sup>11</sup> By offering the service for free to their DSL customers, Verizon is creating an environment where Wi-Fi will be an expected component of a communications relationship. Rather than establishing Wi-Fi as an incremental revenue opportunity, Verizon is using Wi-Fi as a means to protect their DSL installed base and large, sunk costs in rolling out their backhaul infrastructure. Reaching profitability for Verizon’s DSL business becomes even more important as domestic telephone revenues are shrinking at a rate of 4% per year.<sup>12</sup>

In addition to defending their DSL turf, Verizon is also focused on growing their wireless business. Verizon Wireless, a joint venture between Verizon Communications and Vodafone PLC of the UK, announced their own intentions to launch a Wi-Fi service. Verizon Wireless has partnered with Wayport to offer the service wherever they currently provide service. Customers opting for Wi-Fi access see the charges on their Verizon Wireless bill, allowing Verizon to maintain a degree of control over their customer experience. The pricing options are simple and easy to understand, but do not offer a pre-pay option.

Verizon Wireless	Pricing	Details
Monthly unlimited access	\$34.99	Contract renews monthly
Daily unlimited access	\$6.99	Valid for 24 hours

Source: Company website and Gartner Research

Like other wireless carriers, Verizon is also trying out high-speed cellular data service, called CDMA20001x EV-DO, in San Diego and Washington DC. Verizon Wireless has branded this service “BroadbandAccess,” and for \$80 per month, customers can achieve average bandwidth speeds of 300-500 kbs, with bursts up to 2 mbs. Outside of these cities, users are on the “NationalAccess” network (based on CDMA2000 1XRTT technology), where speeds average about 40-60 kbs. Once Broadband Access is rolled out nationally, a customer could get maximum speeds not too far behind Wi-Fi while traveling, thus removing the distance limitations associated with Wi-Fi. Where the company is going with all their data offerings is unclear, but we feel that announcement that Verizon Wireless is moving into Wi-Fi is a preemptive move on their part prior to a wider rollout of their 3G technologies.

Verizon has yet to articulate exactly how their 3G, DSL and Wi-Fi strategies will all fit together across their companies. There are certainly synergies that they can generate by sharing network capacity and Wi-Fi hotspot build-outs, but we have yet to see any clear direction from the company. However, we can envision a scenario where Verizon, with its dominant position in the cellular and landline markets, uses Wi-Fi primarily as a customer retention tool rather than a revenue driver.

Recently, the company announced that they will temper the rollout of Wi-Fi access points in New York City to 500, not 1000,<sup>13</sup> signaling to us that they have yet to recoup the investment they are making in rolling out the service. Verizon also needs to establish relationships on the DSL side that offer Wi-Fi roaming not just in New York City, but where their customers travel.



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Verizon Wireless has done so for their customer base, but Verizon DSL has not. This is where the company could offer their DSL customers true value.

**B. SBC Communications**

SBC is currently in the process of rolling out their FreedomLink product in the Western United States. Over the next three years, SBC will have more than 20,000 hotspots in 6,000 different venues, but will only have 1,000 by the end of 2003.<sup>14</sup> SBC is partnering with Wayport to offer the service until the company can build out its own network infrastructure. The initial target for their Wi-Fi rollout are business travelers and subscribers to the SBC Yahoo! DSL broadband service, offering pay-as-you-go pricing at a number of different levels. By partnering with Wayport, SBC already has a sizable presence in airports and hotels across the country, offering users the same coverage as all the other firms that partner with Wayport.

SBC	Pricing	Details
Pay-as-you-go \$25	\$25	3 connections, each valid for one day
Pay-as-you-go \$50	\$50	8 connections, each valid for one day
Pay-as-you-go \$100	\$100	20 connections, each valid for one day

*Source: Company website*

The pricing options are straightforward, but expensive. We expect SBC to revisit their pricing scheme soon, especially as they attempt begin building out the rest of their network. While the company may make some incremental revenue from Wi-Fi subscription and access fees, we expect the true thrust behind this initiative is generating more revenue and staving off churn for their SBC Yahoo! DSL subscriber base (2.8 million subs as of Q3 2003) and to drive more customers to their flagship bundle, SBC Total Connections in their 13 state coverage area, primarily in the Western United States (including Texas and California). As yet, there are no details on the pricing options that will be offered to current SBC customers, but we expect an aggressive offer if customers are willing to sign-up for bundled services and/or sign long-term contracts with SBC.

In addition, SBC has a stated goal of offering seamless services for their customers across technologies, and in their announcements have discussed integration with Cingular Wireless and their EDGE (Enhanced Data Rates for GSM Evolution) services. Cingular is in the process of rolling out their EDGE services incrementally across the United States, which will offer data speeds between 100 – 130 kbs. SBC and Cingular will roll out an integrated service in late 2004 or early 2005, and by then will improve cellular data speeds to 170 kbs, according to the company. The service will allow customers to roam from their DSL line, to 3G (or EDGE) service to Wi-Fi.

For current SBC and Cingular customers an integrated service would dramatically increase the usability of data services, and drive adoption of mobile data access for the company. If SBC can overcome the technical hurdles and succeed with this integration across networks and provide consistent and affordable billing, we expect they would be able to increase the lifetime value of their subscribers significantly.



### 2.3. Cellular Telephone Operators

A lot is at stake for the wireless carriers. With the implementation of Wireless Number Portability (WNP) in November 2003, carriers are under more pressure than ever to retain control of their customer relationships. From a customer perspective, who may not distinguish one wireless technology from another, he or she may assume that everything wireless should come from their mobile phone provider. However, T-Mobile is the only carrier so far that is building their own, dedicated Wi-Fi network in an attempt to deepen their customer relationships. The other carriers are partnering with firms like Cometa<sup>1</sup> to provide Wi-Fi service, primarily to their business customers. In fact, finding information on any carrier’s website about their Wi-Fi service remains difficult, as it is buried in their information specific to business-oriented users.

Nevertheless, the wireless carriers represent a significant opportunity to spur Wi-Fi’s growth – they have the marketing reach and customer relationships to offer Wi-Fi to millions of users. Attractive pricing and bundling options are critical to the wireless carriers’ push into Wi-Fi.

#### A. T-Mobile

T-Mobile is the pioneer among the wireless operators in the area of hotspots, launching their “T-Mobile Hotspot” in conjunction with Starbucks in late 2002. This partnership has given T-Mobile the most high profile hotspots in areas that are a natural fit for their target customer: mobile professionals and students that need web-access. In addition, T-Mobile recently signed a deal with Borders Books & Music Stores to offer Wi-Fi access, and with American Airlines to provide service in their Admirals Clubs nationwide. With these partnerships, T-Mobile has a footprint of over 3500 locations that they operate, making them one of the largest Wi-Fi hotspot operators in the country.

The pricing options for a T-Mobile hotspot are relatively straightforward, with various contract options and day passes. The most aggressive part of T-Mobile’s pricing strategy is the discount given to current T-Mobile cellular subscribers: \$19.99 per month is the least expensive option we’ve found that offers national Wi-Fi access capability. Other pricing options are listed below.

<b>T-Mobile</b>	<b>Pricing</b>	<b>Details</b>
Unlimited National - T-Mobile Subscriber	\$19.99 / month	T-Mobile voice plan \$39.99 and higher
Unlimited National	\$29.99 / month	With annual contract
Unlimited National	\$39.99 / month	Month-to-month contract
Day Pass	\$9.99	24 continuous hours from activation
Pay-as-you-go	\$6	Includes 60 minutes, \$0.10 per add'l minute

Source: Company website

<sup>1</sup> Cometa Networks was founded by AT&T, IBM, Intel, Apax and 3i to resell wholesale wireless services to carriers and hotspot operators. It is not in the business of marketing to end-users to offer Wi-Fi access, and is thus outside the scope of this report.



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The move by T-Mobile to offer such an aggressive price point is the first instance of a wireless carrier trying to provide a “seamless” wireless experience for their customers. While the technologies are different and there is no true “roaming” between cellular and Wi-Fi, the customer experiences one bill for all their wireless services. However, the user is limited to the hotspots that T-Mobile has built out, as opposed to a Boingo customer that could find access from a number of different providers through their roaming agreements. It remains to be seen what T-Mobile will do with respect to roaming across other carriers, but the company is said to be in discussions about what steps they will take.<sup>15</sup> T-Mobile might be hesitant to open up their networks due to the high sunk costs they’ve incurred installing T-1 lines and investing in the backhaul infrastructure to support their offering. If their subscriber growth targets are not met, however, we suspect that T-Mobile will be quick to sign an agreement to bring more traffic to their hotspots.

By moving quickly into the Wi-Fi provider market, T-Mobile is establishing their brand as providing everything wireless, a “one-stop-shop” for wireless access. Once the market for Wi-Fi moves past the early-adopter stage, which we believe we are still in, T-Mobile will be well positioned to pick up their mass-market cellular customers and with WNP cherry-pick customers from other operators.

**B. AT&T Wireless**

AT&T Wireless launched their “GoPort” service in early 2003, and they primarily offer the service through a partnership with Wayport. AT&T Wireless has piloted some hotspots of their own in a few major airports (Denver International being the first), but the primary means of providing access is still through Wayport’s network.

AT&T Wireless	Pricing	Details
Single Connect	\$9.99	24 continuous hours from activation
Five Connect Multi-Pak	\$29.99	\$5.99 per connect, 180 day expiration
Ten Connect Multi-Pak	\$49.99	\$4.99 per connect, 180 day expiration
Monthly Unlimited	\$69.99	30 day expiration

*Source: Company Website and Gartner Research*

At first glance, AT&T Wireless service seems to make a lot of sense for the company: relative to T-Mobile, they have a higher percentage of business customers, a natural fit for offering Wi-Fi service. The company appears to have a somewhat defined wireless data strategy with their mMode service, and offering Wi-Fi could be a nice complement for higher-bandwidth service in areas where it is available. However, the experience AT&T is offering their customers is anything but seamless. Billing and customer service are handled by QPass, a third-party billing platform provider. Customers thus lose the convenience of one bill from one provider, and the less-savvy consumers may not be willing to deal with multiple vendors for their “wireless” service.

AT&T Wireless’ service is relatively expensive compared with other operators and aggregators. This offering appears more of a “me-too” product at this point, rather than a coherent new strategy to enter into high-speed data service. In addition, AT&T Wireless launched EDGE

(Enhanced Data Rates for GSM Evolution) service nationwide in November 2003, offering published data-rates of between 100 – 130 kbs, much slower than Wi-Fi but more than twice the speed of current cellular data networks. EDGE service is available nationwide and does not have the distance limitations that Wi-Fi has. AT&T is pricing this service on a per-megabyte basis, and requires the purchase of a \$149.99 laptop modem card from SonyEricsson. If AT&T Wireless can figure out how to more reasonably price these two services, and offer their subscribers the ability to “roam” between them, then the company could offer an extremely compelling service for their customers. AT&T Wireless was the first company to offer a truly nationwide calling plan in the mid-1990’s, OneRate, and as such did away with the high roaming fees and charges that became prevalent in the cellular industry. They have an opportunity to do something similar in the market for wireless data, but until then, their strategy remains uncertain and confusing to a Wi-Fi consumer.

### C. Sprint PCS

In July 2003, Sprint PCS announced their intentions to offer Wi-Fi hotspot access to its customers. Service is available in what Sprint calls their “Wi-Fi ZONES,” a combination of their own hotspot build-out and partnerships with Wayport and Cometa Networks. As of November, Sprint PCS users could use any of Wayport’s access points nationwide. Initial reports from Sprint PCS indicated that the company would offer over 2,100 access points<sup>16</sup> through their Cometa relationship by the end of 2003. However, Sprint has recently indicated those hotspots would not come online until at least the first half of 2004.<sup>17</sup>

For individual users, Sprint PCS offers one price point, a 24-hour access charge of \$9.95. This amount is billed up-front, directly to a customer’s credit card via their website. There is no discount for current Sprint PCS cellular customers, and billing for current customers is still handled in this pre-pay manner. This makes the Sprint PCS service a little easier for non-subscribers to use. But if the company’s ultimate goal is retaining cellular customers and enhancing that relationship, Sprint PCS is coming up a bit short.

<b>Sprint PCS</b>	<b>Pricing</b>	<b>Details</b>
PCS Wi-Fi Access	\$9.95	24 hours of access at any location

*Source: Company website*

Users can download a utility from the Sprint PCS website that allows them to access to the hotspot. This utility also allows a user to toggle from their Sprint PCS Vision and their Wi-Fi service. A user must purchase a PCS Connection Card from the company to access PCS Vision on the Sprint CDMA2000 1x network, and pay for the additional PCS Vision service (50 – 70 kbs data speeds). Sprint PCS has thus gone one step further than AT&T in attempting to integrate their cellular and Wi-Fi data options. While there is not true roaming across the CDMA2000 and Wi-Fi networks, Sprint PCS is trying to make the experience more user-friendly and appear consistent with the use of this utility.

### 2.4. Free Hotspot Operators

In addition to all the companies rushing in to monetize the opportunity for Wi-Fi hotspots, there are just as many if not more hotspot operators willing to allow anyone to access their services.



For many, Wi-Fi is not about generating incremental revenue. As the barriers to entry for operating a Wi-Fi hotspot fall, more and more shopkeepers and individuals are beginning to see the value of offering their customers Wi-Fi. Off the shelf Wi-Fi gear now costs about \$50 to \$100, and with an additional \$50 for a DSL line, an operator can be up and running. Of course, there are the intangible costs of operating the network, such as set-up, maintenance, and customer support. Nevertheless, there are numerous examples of business owners, communities, and individuals that are offering free Wi-Fi, with varying levels of success.

And its not just the small coffee shops. Community organizations and individuals are setting up their own free Wi-Fi hotspot access points, some in efforts to revitalize public spaces while others are on a mission to provide free access to all. Regardless of their aims, free Wi-Fi access could create potential problems for the fee-based operators.

### **A. Independent Coffee Shops**

One of the most formidable competitors to T-Mobile, who has staked their Wi-Fi future on Starbucks, are the individual and regional chain coffee shops located near Starbucks locations. These independent operators are able to quickly and cheaply set-up a comparable Wi-Fi hotspot for their customers, and are able to steal some customers away from Starbucks and T-Mobile.

The author of this report was working in a Starbucks in Westwood Village, California one afternoon, and when he started his browser to see what would happen, a splash-page from a neighboring coffee shop appeared on the screen. Indeed, these types of guerrilla marketing campaigns are proving useful and effective for smaller coffee and snack shops. By providing a free hotspot and a splash advertising page to other customers, the store can attract and retain them and draw revenue away from their competitors.

### **B. Schlotzsky's Deli**

One of the innovators in offering free Wi-Fi access on a wider scale is Schlotzsky's Deli. Their "Cool Cloud" Wi-Fi network is currently up and running in 30 of the firms 600 restaurants. With no upfront costs for an average user, Schlotzsky's is hoping to draw more customers into their stores, with the aim of increasing repeat usage during the visit and to increase the number of visits per customer per year. Schlotzsky's CEO says that the company already has a positive ROI on the investment, making approximately \$100,000 per year per outlet on about \$8,000 in infrastructure and operating costs.<sup>18</sup> The company is going a step further, mandating that new franchisees offer Wi-Fi in their restaurants, and they company will amortize the costs of access to a T-1 line across all franchises as a means of promoting adoption.

This is one of the first, concrete examples of the benefits seen by offering free Wi-Fi, and we believe a harbinger of things to come. By offering access for free, Schlotzsky's is driving customer loyalty and increasing revenue, and at the same time creating an expectation of free access for customers when they visit other establishments. If other companies adopt models like the one Schlotzky's employs, we could see significant price erosion at other operators, as consumers come to find Wi-Fi as an expected part of the service, rather than an extra, fee-based product offering.

### C. Bryant Park and NYCWireless

The origins of growth in the Wi-Fi space came from technology enthusiasts, who were looking to provide a service to their neighbors. Small communities of Wi-Fi users began popping up in San Francisco and New York, in an effort to make their neighborhoods connected to the Web as a sort of public service. These operators are not unlike LittleItaly Wi-Fi in San Diego, who said, "...Wi-Fi is something I can offer to make our community that much more appealing."<sup>19</sup>

Perhaps there is no other community Wi-Fi effort as large or high-profile as that in Bryant Park, in mid-town Manhattan. During the summer of 2002, the Bryant Park hotspot was launched to the public. The hotspot was built by a volunteer group called NYCWireless, whose goal is to create numerous, public and free Wi-Fi access points throughout the city. By making the city more connected, it becomes more livable and attractive to its residents. Thus, Wi-Fi becomes a public service, not a public utility, something that operators like Verizon should be wary of as they look to further invest in their own Wi-Fi hotspots.

### D. Buck's of Woodside

For the Silicon Valley set, the restaurant Buck's of Woodside has been offering Wi-Fi for nearly 5 years. Buck's has been an epicenter of sorts for technology deals and startups in the Valley, and as such is an early adopter of Wi-Fi technology. After installing the basic equipment, the Wi-Fi service is operating for Buck's customers, and the owner isn't trying to charge for it. Why? Because, in his words, "My customers see wireless as a right, not a commodity."<sup>20</sup>

This attitude is indicative, like at Schlotzky's Deli or with the community Wi-Fi effort at Bryant Park, of the emerging feeling among the early adopters that Wi-Fi is free, an expected service like salt and pepper in a restaurant. These things cost money to maintain, but no restaurant owner would ever think to charge for them. As a result, Buck's offers this service to ensure that customers come into the restaurant more often and stay longer to buy more food and drink.

Whether a consumer can find free Wi-Fi at a restaurant, in a park, at a rest stop, or next door to Starbucks, the effect is clear: there is a growing rift between the fee-based operators and the free, community Wi-Fi efforts. Is there room for both kinds of operators in an always-on, Wi-Fi enabled world?

## 3. The Future of Wi-Fi and the "Free vs. Fee" Debate

During the mid to late 1980's, the market for cellular telephones was highly fragmented. Local cable operators and paging companies were acquiring spectrum from the FCC at a feverish pace. Service quality and price varied widely by geographic area, and frequent travelers often found themselves with no coverage in areas beyond their carrier's geography. It wasn't until roaming agreements were signed and consolidation among some of the larger operators took place that individuals were able to roam with their telephones. Breakthrough offerings like AT&T's "One Rate" in the mid-1990's drove significant users to AT&T. Upon seeing this, the remaining carriers established their regional and national footprints and signed roaming agreements with each other, causing the adoption of cellular services to increase dramatically. Today, there are over 153 million wireless users in the United States,<sup>21</sup> as a result of consolidation among the



local and regional operators and due to roaming agreements that made cellular phones truly mobile.

The market for Wi-Fi hotspots is still in its infancy, with numerous local and national competitors vying for position. A heavy traveler and Wi-Fi user may need two or three Wi-Fi accounts in order to ensure that she will have access in all the airports and hotels she might travel to, which is one of the main impediments to widespread consumer adoption. Partnerships are being struck across Wi-Fi operators, but the major players like Wayport and T-Mobile have yet to provide a means of roaming between their networks. Just like the cellular industry, Wi-Fi access will become that much more interesting when widespread roaming becomes available for a reasonable price.

The independent operators and the organic growth of Wi-Fi access in the home may also be creating an environment in which consumers will be resistant to paying for Wi-Fi anywhere. Right now, hotspot operators are content with targeting a small (but price insensitive) piece of the market in business travelers. But just like cable TV became a staple of hotels around the world, so could Wi-Fi if people truly come to demand it. Indeed, with the cost of Wi-Fi gear dropping so dramatically, an average customer may reason that access should be free and ubiquitous for them wherever they go. We haven't seen this scenario materialize, but it is something hotspot operators need to consider when determining their investment and business strategies.

So is there an opportunity for the fee-based hotspot operators to make money when there are so many free Wi-Fi options out there? We feel that direct revenue generation from Hotspots will remain elusive for most operators. The true benefits of Wi-Fi will come in terms of developing stronger customer relationships to reduce churn for the voice carriers, and will come as productivity enhancements for the end user. For Boingo and Wayport, the critical component of success will be in their ability to continue to establish a wide footprint of access to their customers. And they must be able to offer a heavy-user the kind of consistency they expect across all access points, with service level agreements (SLAs) and quality of service (QoS) contracts. If they can develop a consistent network of access points in the majority of places a business-traveler frequents, we think they can lock-up this part of the market.

The pure-play Wi-Fi operators need to watch out for the incumbent carriers, both wireline and wireless. As we've pointed out, these companies already have established relationships with their customers. As we move out of this period of early adoption, the mass market may not be willing to take a "risk" on an unknown carrier like Wayport or Boingo. To the extent these companies remain roaming partners with AT&T, Verizon, SBC, etc., they will continue to be successful, but in yielding the customer relationship to the carriers, they may lose out on incremental revenues in the future. As evidenced by SBC and Verizon, they already have plans to build their own hotspots, thus potentially removing revenue streams from companies like Boingo and Wayport.

With their new push into selling directly to business with large businesses that have a significant mobile workforce, we feel Boingo and Wayport will have an opportunity to prove themselves.



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They know the Wi-Fi business and have been doing it longer than the incumbent carriers, and as such will have a leg-up in selling directly to these businesses. So while they may not get in on the mass-market, consumer adoption of Wi-Fi, they have a significant opportunity to establish strong relationships with business customers. Their strength will be in the network and locations of their hotspots.

For the landline carriers and wireless operators, Wi-Fi isn't about driving additional revenue. Analysts project the cost of subscribing to a Wi-Fi hotspot will fall from \$30-\$40 per month in 2003 to \$5-\$15 per month in 2007.<sup>22</sup> Carriers are facing an environment that is becoming increasingly competitive for customers. The landline carriers are for the first time seeing a decline in the net number of subscribers to their telephone networks, and with number portability in full swing, all the carriers are seeing customers jump ship for other operators. With customer acquisition costs averaging \$323 in Q3 2003 for the wireless carriers,<sup>23</sup> the prospect of trying to replace lost customers is an expensive proposition. With most observers expecting churn to increase in the coming years, anything a carrier can do to stave-off defections is a good idea.

The opportunity in-fact may not lie in Wi-Fi access revenue by itself, but rather in the opportunities the Wi-Fi build-out is creating for the different operators. New technologies like Voice over Internet Protocol (VOIP) will enable companies like T-Mobile to offer enhanced cellular services in areas that have Wi-Fi coverage. In the first half of 2004, cellular phones running Microsoft's operating system will be able to establish a Wi-Fi connection with an SDIO card from SyChip.<sup>24</sup> And companies like Broadcom and Royal Philips Electronics are developing smaller and more powerful 802.11b chips to be used in next-generation cellular phones,<sup>25</sup> making a handoff between cellular and Wi-Fi networks a reality.

Imagine a T-Mobile customer sitting down in a Starbucks using VOIP to call her family and access a flight itinerary – T-Mobile saves money by moving traffic directly to the T-1 line running out of the Starbucks, freeing up valuable cellular airtime for other users. So while the company may not be making a lot of money from Wi-Fi, the opportunities it opens up for their users in terms of convenience and cost-savings may more than offset the cost of the investment.

Verizon might be able to offer their business customers a cellular and Wi-Fi enabled handset to provide in-building VOIP service via Wi-Fi while giving the user roaming capability outside the office on their cellular network. This further entrenches the customer relationship and provides a valuable service to professionals that need access to their phones all the time. And with their Wi-Fi build happening throughout the city, VOIP could even continue outside the office, providing a means of establishing an optimal bandwidth connection for the user depending on their usage patterns. Again, the cost savings in terms of network access and in potential churn reductions could provide a slightly more intangible ROI for Verizon's Wi-Fi build. Operators, carriers, and investors need to be cognizant of this fact, that while the network of Wi-Fi hotspots can drive some incremental revenue, the true value of the hotspot may be more elusive.

#### 4. Conclusions



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With industry heavyweights like Intel, Cisco, and Microsoft in the market for Wi-Fi, it's proliferation as a technology is assured. Wi-Fi chips are no longer considered an "option" on laptop purchases, and users are beginning to understand the "unwired" message emanating from Intel. However, with the entry of these gorillas into the device market, margins are being squeezed and indeed high-profile startups like Trapeze Networks and Vivato are being forced into layoffs.<sup>26</sup> Will the same thing happen in the market for Wi-Fi hotspots, driving smaller firms out of the industry?

Probably not. There will not be one clear winner in the market for Wi-Fi access. In fact, we feel there won't be any winners until the carriers can figure out their roaming relationships in a way that can truly mobilize the users that need access. This is inevitable as the industry matures, but nevertheless it remains a stumbling block in generating widespread adoption and excitement among some users. Providing secure, consistent access is the primary necessity for the fee-based operators to succeed, as that is the value they can provide versus the free operators.

The average Wi-Fi customer will end up being the true winner, with the cost of access expected to decline over the next few years. And as the carriers figure out their roaming issues, both across operators and cellular and 802.1x technologies, the Wi-Fi consumer can become more productive in more locations, with one bill and one carrier relationship. This will allow each company to do what it does best: Wayport could provide the Wi-Fi infrastructure, Boingo the software and billing relationships, and the carriers and wireless operators can develop the pricing and promotions that will encourage more subscriptions. Once everyone begins working in tandem, Wi-Fi's growth will explode into the mass-market.



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