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Wi-Fi Outlook: Home Equipment Shipments Are Surging

By Lauren Gibbons Paul
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Wireless LAN technology, called Wi-Fi for short, will continue to be a **major opportunity for the worldwide computer OEM community**. Wi-Fi unit shipments will grow more than 50 percent in both home and business markets this year, according to a new report from In-Stat/MDR, a market research firm that focuses on the semiconductor and communications markets.

Three variants of the IEEE 802.11 standard for networks (802.11b, 802.11a and 802.11g) offer higher speeds based on the use of different radio frequency spectrum. In-Stat predicts "dual-mode" hardware capable of running at speeds of both 2.4MHz (.11b) and 5GHz (.11a) will be increasingly important. Users are understandably **wary of getting locked into 802.11 b** (the most popular Wi-Fi standard, which offers up to 11Mbps) without an easy way to upgrade to higher speed standards like 802.11a (which runs at 54Mbps). 802.11g also runs at 54Mbps, but it provides more bandwidth.

According to the In-Stat report, **Wi-Fi is poised for huge growth** in the worldwide home market, especially in Japan, Australia and North America. Shipments of home Wi-Fi units are growing 160 percent annually, to 6.8 million units this year, according to In-Stat.

"The growth in Wi-Fi equipment being shipped to the home market is just astounding--much more than we expected," says Gemma Paulo, senior analyst, networking, for In-Stat. Paulo is the author of the 80-page report titled "It's Cheap and It Works: Wi-Fi Brings Wireless Networking to the Masses." The majority of home Wi-Fi users are looking to **share one high-speed Internet connection** across all computers in the household via a wireless connection.

The **use of Wi-Fi in business settings** also will grow at a healthy clip over the next few years. Combined shipments of Wi-Fi access points (APs) and network-interface cards (NICs) are expected to increase 50 percent annually. (See chart, A Growing Wi-Fi Market.)

What do you think?

In-Stat predicts worldwide spending on Wi-Fi equipment will leap by approximately 30 percent this year versus 2002. Click on your prediction and then see what others think.

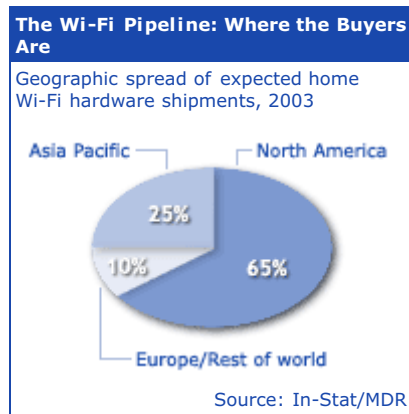
- We're more optimistic--at least 35 percent
- We agree
- They're dreaming--we're planning for 25 percent
- The increase in spending will be less than 20 percent
- Don't know

According to Paulo, makers of PC hardware have an **opportunity to differentiate their Wi-Fi product lines** adding 802.11a-only products, dual-band 802.11a and .11b products as well as a sprinkling of 802.11g products to the current crop of 802.11b offerings. This will help insulate against continued falling prices for 802.11b equipment. Vendors are looking to 802.11g and 802.11a products to bring a little more margin. "802.11b is seeing the volume but not as much margin," says Paulo.

XP Simplifies Wi-Fi Configuration

The combination of low cost and increased reliability drove consumers to buy 802.11b-based Wi-Fi products in record numbers in 2002. **Wireless routers are flying off the shelves**; both individuals and small office-home office (SOHO) users seek to share one broadband Internet connection among all household computers, thanks to a wireless connection.

Although many home users still find it challenging to set up their own wireless networks, **Microsoft has eased the task** for users of its Windows® XP ([More Info](#)) desktop operating system. "XP's support [for 802.11b] has definitely helped consumers in the home as far as installation. Many home users are still running Windows 98 and 2000 and other operating systems, but for those who have XP, this is a huge benefit," says Paulo.



In 2002, nearly 100 percent of home Wi-Fi units ran at 2.4GHz and supported only 802.11b, according to In-Stat's report. But by the end of next year, **units supporting 802.11g (running at 2.4GHz) will gain traction** in the home market. (See table, Home Use Dominates Wi-Fi Sales.) Hardware supporting 802.11a, the high-speed version of Wi-Fi, will represent about a quarter of the market by 2005, with dual-mode units making up approximately another quarter by the end of 2006.

OEMs targeting the home space should consider making dual-mode or high-speed versions of their equipment, says Paulo, since those profit margins are higher.

In addition to the need to share home broadband connections, other drivers for the explosion in home Wi-Fi use include:

- **Cost.** Starting late last year, street prices on Wi-Fi NICs for home use began to fall precipitously. Currently, the NIC's retail price is less than \$60, while the router/AP costs are below \$100; Dell recently offered a free NIC and router/AP with each high-end laptop ordered. For a modest cost, home users can assemble their own wireless LANs (WLANs) with routing capability, a three- or four-port Ethernet switch and basic firewall functionality.
- **New Players.** Microsoft joined companies like Belkin to offer new products such as the USB NIC

for desktop units and the PCMCIA NIC for laptops that proved especially attractive to home users.

- **Wi-Fi Embedded in Laptops.** The rate of embedded 802.11b support in laptops has greatly increased, from 2 percent in 2001 to a forecast 14 percent in 2002. Intel's recently announced Centrino chipset--and the related marketing campaign--can be expected to propel embedded Wi-Fi demand even more this year.
- **Cool Wi-Fi Gadgets.** Microsoft's Smart Display, for example, lets users have a mobile monitor via 802.11b. Wireless Ethernet media servers let gamers play online without the need to run a cable from the game console to either the cable modem or the router.

Asia Pacific Is The Sweet Spot

In the home market, **Wi-Fi acceptance is closely related to the rate of broadband penetration** in the area. Although 69 percent of home Wi-Fi unit shipments were to North America in 2002, that

percentage rate will steadily fall in subsequent years as a result of location saturation and increased broadband penetration elsewhere. (See chart, The Wi-Fi Pipeline: Where The Buyers Are.)

Home Use Dominates Wi-Fi Sales	
Global 2003 shipments of home Wi-Fi nodes by type	
Wi-Fi Version	Thousands of Units
802.11b	7,918
802.11g	1,878
802.11a	782
a/b dual-mode	329

Source: In-Stat/MDR

North American home Wi-Fi shipments will make up less than 50 percent of total worldwide shipments by the end of 2006. Sales in the Asia Pacific (including Japan, South Korea and Taiwan) region and Europe will pick up the slack as broadband access for these populations increases.

Especially Japan and South Korea. "Their governments encourage service providers to roll out DSL," says Paulo. "People there tend to live in apartments, which makes it easier to provide DSL or cable." Vendors such as Buffalo in Japan and Samsung in South Korea already have seen growth in home Wi-Fi equipment sales.

Europe is another growth area. "The Europeans are very focused on the carriers being able to extend Wi-Fi to the home customer," says Paulo. "It looks like Europe will accept it more, even though broadband penetration has been much lower than expected there." Note that the 5GHz segment of the radio frequency spectrum is not freely available in Europe, which will diminish interest in 802.11a. Australians have steadily adopted Wi-Fi in 2001 and 2002; their acceptance rate will continue throughout 2006, according to In-Stat's report.

Multiple Standards Confusing

The **proliferation of WLAN technologies is potentially confusing** to users--especially in the home market. For example, 802.11 was first ratified as a standard by the IEEE in 1997. But these products rapidly lost out to equipment based on 802.11b, which first appeared in late 1999. Both the business and home markets embraced 802.11b, and the vast majority of Wi-Fi products on the

market today run it.

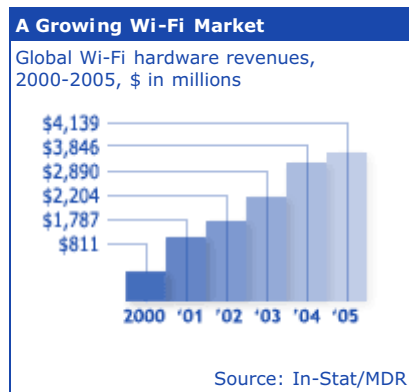
But businesses in particular were interested in the high speed (5GHz) offered by 802.11a when it arrived near the end of 2001. And both **home and business users have shown interest in 802.11g** (2.4GHz) since the standard debuted in late 2002.

With all these different versions, there is potential for bewilderment among users, says Paulo.

Reliability is the bottom

line, however. Both home and business Wi-Fi users tend to be relatively sophisticated in the way they approach WLAN buying decisions.

"As long as the equipment works well together, people will accept it," says Paulo. But "people won't buy the stuff if it doesn't interoperate."



Toward that end, the Wi-Fi Alliance (an industry consortium of vendors and experts) tests products to ensure they work well together. The current crop of 802.11b products meets this requirement. The **Wi-Fi Alliance does not yet certify 802.11g products**. For some individuals and businesses, this fact will be a deterrent. But for most users, it will not. According to In-Stat, the widespread shift from 802.11b to 802.11g as the standard of choice in the 2.4GHz band will begin in earnest this year.

About In-Stat

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Lauren Gibbons Paul has more than 15 years of experience as a writer and editor for leading business and technology publications, including eWEEK, CIO, Managing Automation and Network World.

Have a question? Want more information? Contact the writers and editors at oemedit@microsoft.com.

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