

Wireless Fidelity - Now You Can Nearly Have It All

By Cormac Reid - Managing Director - Comms-Online

The time is now you can have it all, Wi-Fi (Wireless fidelity), GPRS and 3G (in months to come if you think it is worth having). Let's take a look and ponder Wi-Fi. It really has just jumped up out of a few techno hobbyists' dreams to set the Internet free and make our society truly mobile. I recall my interview with Dr Chris Horn last year and he steered me to watch the emerging Wi-Fi technology which as I recall some of his peers and colleagues in the ICT media had set up "Hot Spots" in Ranelagh Dublin for the purpose of creating a free and mobile internet community. At the time we were really only sitting on the edge of what might become the next phase of the Internet revolution.

So what is Wi-Fi? and how is it useful in the real business world? How is it going to co-habitate with the other wireless services available or soon to be available namely GPRS and 3G?

Wi-Fi (short for "wireless fidelity") is the popular term for a high-frequency wireless local area network (WLAN). The Wi-Fi technology is rapidly gaining acceptance in many companies as an alternative, or in addition to a wired LAN. It can also be installed for a home network and this is proving to be popular as it can be done so quite inexpensively with the new xDSL charges and equipment cost are ever tumbling. Wi-Fi is specified in the 802.11b specification from the Institute of Electrical and Electronics Engineers (IEEE) and is part of a series of wireless specifications together with 802.11, 802.11a, and 802.11g. All four standards use the Ethernet protocol (Now Thirty years old) and CSMA/CA (carrier sense multiple access with collision avoidance) for path sharing.

The 802.11b (Wi-Fi) technology operates in the 2.4 GHz range offering data speeds up to 11 megabits per second. The modulation used in 802.11 has historically been phase-shift keying (PSK). The modulation method selected for 802.11b is known as complementary code keying (CCK), which allows higher data speeds and is less susceptible to multipath-propagation interference.

Unless adequately protected, a Wi-Fi wireless LAN can be susceptible to access from the outside by unauthorised users, some of whom have used the access as a free Internet

connection. (The activity of locating and exploiting security-exposed wireless LANs is commonly known as war driving. Companies that have a wireless LAN are urged to add security safeguards such as the Wired Equivalent Privacy (WEP) encryption standard, the set-up and use of a virtual private network (VPN) or IPsec, and a firewall or DMZ. (Ref: John Handleys article on Security)

After a few years as a techno-hobbyists latest toy, Wi-Fi is beginning to surf its way into our corporate world. And it's proving irresistible to businesses willing to venture onto the wireless edge. From sme's to some select corporates, companies are using Wi-Fi for mission-critical jobs in factories, trucks, stores, and even hospitals.

Wi-Fi networks, known as hot spots, have popped up faster than spots on a teenager. Thousands of do-it-yourselfers worldwide have rigged antennas to create their own hot spots. They've joined together to form networks so that the public can zap e-mails and surf blogs for free, no matter where they are. From street corners in Dublin to mountaintops outside Seattle, some 5,000 free hot spots have emerged. It is becoming a Wi-Fi world. More than 18 million people worldwide have logged on, and the numbers are growing daily. And this growth is going to be assisted by products such as "hotspot in a box", a BT product that is aimed at smaller businesses, such as bookstores, golf clubs and cafes, in order to allow business owners to set up their own 802.11b networks for customers. Toshiba, Cisco, Nortel and Carphone Warehouse are all partnering with BT on the scheme. Pricing details are not yet available. Yet Business travellers' appetite for cheap and fast remote access to the Internet will see revenues blossom in both Europe and the USA, according to a report by telecoms consultancy Analysys, published in March of 2003.

According to the report, Public WLAN Access in Western Europe and the USA: market analysis and forecasts, revenue will grow from a lowly USD33.4 million in 2002 (USD10.9 million in Western Europe and USD22.5 million in the USA) to a lofty USD5.5 billion by 2007. Western Europe will account for USD2.64 billion of this

revenue, with the US chipping in just shy of USD2.8 billion, Analysys' projections.

Hotspots are currently being installed in airports, hotels, conference facilities, cafes, restaurants and rail stations and are estimated to grow from 4,800 in 2002 (1,400 in Western Europe and 3,400 in the USA) to 57,000 by 2007 (30,000 in Western Europe and 27,000 in the USA).

However the challenge facing the tech industry is to transform this unruly phenomenon into a global business. This involves transforming a riot of hit-or-miss hot spots into coherent, dependable networks. It means coming up with billing systems, roaming agreements, and technical standards - jobs the phone companies are busy tackling. The goal, is to take Wi-Fi from a wireless rogue activity to an industrial-strength solution that corporations can bet on and use with the same confidence that the may use a corporate VPN (Virtual private network).

If successful, Wi-Fi has the power to lift the Internet to new heights. A constellation of dependable Wi-Fi hot spots could extend dramatically the range and expanse of the Web, changing its very nature. The path ahead, analysts say, is sure to have its share of bumps. But it could lead to cascades of up-to-the-minute information zipping around offices, homes, and even remote disaster sites. Mesh Networks Inc. in Maitland, Fla., is working on Wi-Fi systems that would allow emergency-response teams to create networks among themselves by simply turning on their laptops or handhelds -- even if mobile or wired networks have been knocked out. Corporations aren't waiting for fine-tuned industrial versions of Wi-Fi to hit the market. The potential productivity gains are so compelling that many are investing in custom-built systems.

Other tech titans are rushing in, too. Intel (INTC) is spending \$300 million to market its Centrino computer chips, which come equipped for Wi-Fi. In March, Cisco Systems Inc. (CSCO) agreed to spend \$500 million for Linksys, a Wi-Fi equipment maker. For the first time, that will put Cisco into head-to-head competition with Microsoft Corp. (MSFT), which ploughed into Wi-Fi network gear last year.

The giants are joined by legions of small fry both in Europe and the US. Last year alone, in the depths of the tech downturn, U.S. venture-capital firms pumped \$2.8 billion into 296 wireless start-ups, says researcher Thomson Venture Economics. And as more companies pile in, prices for Wi-Fi equipment are plummeting. Installing an industrial-strength hot spot costs only €2,500 now, one-fifth what it cost two years ago. Home-gear prices are also in free fall. More than 50 companies are in the chip market alone, estimates Gartner Inc. As the tech powerhouses storm into the market, a painful wave of consolidation is all but assured.

Even for the brave, this hype of technology is hazardous terrain. Off-the-shelf versions of Wi-Fi are often unreliable and rough to install. This undermines confidence in the technology. And key initiatives are untested. Will corporate and consumer users dish out €30 to €50 a month for access to a nationwide grid of Wi-Fi hot spots? O2 in Ireland have a small install base of Wi-Fi Hot Spots and have a varying pricing model with it costing €10 per month and €2 for 20 mins for the frequent user at a minimum purchase in increments of three. One must ask will the number of subscriptions justify the network investments?

Sean Loughman – Head of Innovation – Eircom comments: - "Eircom are currently trialling Wi-Fi in a number of locations at present. The Alexander Hotel, City West Hotel, and the Red Cow Hotel in Dublin, The Silver Springs Hotel in Cork, and The Great Southern in Galway to name a few. Customers need to ask at reception for details of the service and you will receive a complementary scratch card with username and password. Eircom expect to launch a nationwide service in the mid to end of Q3 this year".

The cash won't flow until Wi-Fi security reaches industrial grade. Corporations are hankering for the power and flexibility of Wi-Fi networks, but many are postponing rollouts in strategic areas until they're convinced that hackers, spies, and competitors can't intercept wireless data.

A wild card is the possible overlap between Wi-Fi and the multibillion-dollar project for a high-speed cellular system known as Third Generation. Like Wi-Fi, 3G promises a wireless Internet. It's coming on stream in Europe and Asia and will be spreading in North America in the next two years. As a phone system, 3G provides far broader coverage than Wi-Fi's constellation of hot spots. But Wi-Fi's hot spots are targeted precisely in the hotels, airports,

and commercial centres where mobile Net surfers are most likely to be swarming. This upsets revenue projections for phone companies. Still, they're ploughing ahead with Wi-Fi deployments on three continents, hoping they can bill customers for a menu of wireless services, including both Wi-Fi and 3G.

Wi-Fi turns nearly every machine, from laptops to cash registers, into network devices. And it fuels demand for always-on broadband connections. This, in turn, paves the way for the next generation of Internet services. Intel and computer makers are betting on it to spur laptop sales, which even without Wi-Fi carry profit margins 50% higher than those on desktops. Microsoft is pushing its Windows XP operating system, which is specially adapted to handle Wi-Fi.

In Comms-Online, as we move to our new premises in Blackrock we are deploying a wireless LAN with a private Wi-Fi hotspot that will allow employees have a coffee in Café Java or sit by the sea in good weather (rare enough) while having access to all of the network resources and extending our offices to a choice of restaurants and bars in the event meeting rooms are not available – allowing our employees truly live on the wireless edge – we are in the communications business after all.

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