



## WIRELESS STANDARDS UPDATE Issue 2/2002

Providing secure broadband Internet access to an increasingly mobile population clearly represents a high-growth market. In that regard, we can see an increasing availability of touchdown areas where people on the move can connect to the Internet through high-speed access. Within this issue we will take a closer look at the concept of public wireless **“Hot Spots”**.

As the first **802.11a** products started shipping in the U.S., analysts performed comparative tests in relation to speed and distance; you can find their findings in this issue.

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## **Wireless “Hot Spots”**

### **The concept.**

In parallel with the emerging wireless LAN<sup>1</sup> technology and its increasing acceptance within the enterprise market, we can see a growing interest in the development and implementation of so called “Wireless Hot Spots”.

Public Hot Spots are places such as airports, hotels and conference centres where wireless Access Points are installed for visitor’s use. These APS<sup>2</sup>, in turn, are connected over a WAN<sup>3</sup> connection to an ISP<sup>4</sup>, providing broadband access to the Internet. In this regard, wireless hot spots extend the mobility benefit of corporate wireless LANs by providing connectivity to “road warriors” while being out of the organisation’s offices.

These hot spots are “hot” for two reasons. First, it is a source of extra revenue for the hotels or airports as they can charge the wireless users a fee for the broadband access. Second, it is mostly an area with no wired infrastructure for high-speed data delivery, and there is relatively low expectation for being so in the future, therefore being an ideal implementation area for wireless broadband infrastructure.

The focus is obviously towards area where people meet, sleep and move; locations where users see benefit in consulting and accessing corporate data or the internet while on the move. Ideal premises therefore are airports, hotels, convention centres and even restaurants...

An important aspect, which will add to the success of the wireless hot spots, is to offer a service that meets the needs of the business travellers. This should mean that a user should not have to re-configure his computer and will be able to use the service just as if he were in the office.

Another key aspect is security with the support of VPN<sup>5</sup> solutions and the provision of firewall services for each user. The user needs to have immediate and secure access, so that it becomes convenient in use and management for both the hotel and the guest. Therefore integrating the data service billing in the hotel premises management system adds great value to the whole solution, providing added value to the hotel’s total service pack and increased customer satisfaction.



## **The Hardware.**

Implementation of most of the existing hot spots is realised by using the standards-based technology, which was initially developed for enterprise use, namely 802.11b. This technology operates in the 2.4Ghz license-free ISM<sup>6</sup> frequency spectrum, providing a shared medium of 11Mbps, perfectly suitable for running most day-to-day business-applications.

With the decreasing prices of wireless radio cards, and the increasing integration of wireless technology in laptops and PDA-devices<sup>7</sup>, the hot spots can offer services to a rapidly growing installed base.

Some advantages that these hot spots have over the expected 3G<sup>8</sup> networks are the higher bandwidth availability and the fact that the technology is here & now, there where the 3G networks are still primarily intended for voice.

Success and long life existence of these hot spots will largely depend on the “plug-and-play” accessibility of the provided services, combined with sufficient security measures.

## Glossary

- 1 LAN: Local Area Network => Data infrastructure covering a limited geographical are.
- 2 APS: Access Points => Transceiver providing the interconnection of the wireless user to the wired network
- 3 WAN: Wide Area Network => Data infrastructure spanning a large geographical area
- 4 ISP: Internet Service Provider => Company providing your access to the Internet
- 5 VPN: Virtual Private Network => Tunnelling principle, providing enhanced security for transmitted data.
- 6 ISM: Industry Science & Medical frequency band
- 7 PDA: Personal Digital Assistant
- 8 3G: Third generation Wireless WAN



### **First breeze of 802.11a performance-results from the U.S.**

With the first batch of 802.11a (Wi-Fi5) products starting to ship in the US, this could open up new perspectives in the Wireless LAN market, providing users with higher speeds and enhanced application integration. However be aware that the US version of 802.11a is not compatible with the expected European 802.11a standard; due to difference in transmit power and frequency regulations.

Products based on 802.11a are supposed to be very fast and not as rife with mistakes as earlier products in the 802.11b/Wi-Fi space. The new high-speed wireless LAN products promise speeds up to 54Mbps, working in the license-free 5Ghz frequency band.

Researchers from the network world global test alliance in the US tested some available 802.11a-products on the US market, and a clear finding was that these products obviously benefited from the 802.11b experience, as they were easy to set-up and configure.

While the interoperability of the .11a products proved to be good, the non-standard high-speed modes (where available) didn't inter-operate at all. However, the temptation to use these "turbo-modes" will be high, and this could drive buyers to source from one vendor unless movement towards interoperability is undertaken.

Testing of the 802.11a products (US models), showed that flexibility, management and performance varied from vendor to vendor.

### **Performance:**

With the older IEEE 802.11b cards, the stated data rate is up to 11M bit/sec, and typical performance (data throughput) is about half that rate under ideal conditions. Consider also that 802.11b cards send some signals at 1M bit/sec data rate, and have considerable overhead in traffic.

The 802.11a products promise blazing data rates up to 54M bit/sec under ideal conditions, which would make this five times faster than 802.11b.



The table below gives you an idea of the effective throughput of some tested devices in the US. (Testresults published by the network world global test alliance in the US)

<b>Performance</b>				
Performance rates for access points and turbo modes (in M bit/s) in our FTP application:				
<b>Vendor</b>	<b>Mode</b>	<b>Nearby</b>	<b>60 feet</b>	<b>72 feet</b>
<b>Intel</b>	802.11a	12.8	8.8	5.6
<b>SMC</b>	802.11a	14.4	13.6	10.4
<b>SMC</b>	Turbo	21.1	15.6	10.3
<b>Proxim *</b>	802.11a	15.2	7.2	3.2
<b>Proxim</b>	2x mode	18.4	8.8	3.2
* Proxim's Harmony and Skyline access points had the same performance				

An article posted in network fusion ([www.nwfusion.com](http://www.nwfusion.com)), provides us some statements from some other major players in the WLAN market today: (network world 28/01/2002)

### **Enterasys Networks**

"We took a look at what 802.11a gives us today and what it will provide six to nine months from now. Because 802.11a products need to be enhanced with functionality from the emerging 802.11a (security) and 802.11h (international power control) standards in six to nine months, and we feel that this functionality is essential to an enterprise 802.11a wireless solution, we decided that we are not going to ship an 802.11a product today. Instead, we will ship the upcoming version of 802.11a when it is ready in six to nine months. This will be in our dual-slot RoamAbout R2 access platform, and we will have a solution that customers can use to upgrade their existing oamAbout R2s to the 802.11a standard when it includes these enhancements, and therefore the security and interoperability requirements for the enterprise are met."  
Enterasys Networks



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### **Cisco**

"In terms of Cisco's view on 802.11a:

Current 802.11a solutions are not enterprise-ready. The lack of 802.11a backward-compatibility is a concern. Performance is not a crucial factor of most deployments. 2.4GHz interference is not a practical concern. Cost, power, range, security and interoperability will drive 802.11a deployment. 802.11b and 802.11a will co-exist."

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### **Symbol**

Symbol recently announced the Symbol Mobius wireless LAN architecture to deliver high-speed 802.11a communications while protecting customers' investments in 802.11 and 802.11b infrastructures. The first product will be the Mobius 5224 Access Point. Later in 2002, Symbol plans to bring 802.11a-capable handheld mobile commuting devices to the market. "While there is a lot of interest in the new 802.11a technology, it is important to support the installed base of wireless LAN users while offering the next generation of technology," Symbol's Ray Martino says. "Because Mobius enables an intelligent adoption strategy, enterprises can avoid a 'rip and replace' strategy."

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### **Agere Systems**

"We do not see the 802.11a market taking off in 2002 because of price, coverage and the available spectrum, specifically in Europe. Agere believes that the majority of these issues will be resolved by late 2002, and that volume shipments will start during the course of 2003. Our current AP-2000 and AS-2000 products are 'A' ready. IT managers can buy and install these enterprise access points now using current B cards. When Agere ships the 'A' cards, they can simply pull the 'B' cards and insert the 'A' cards." ♦