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IT Business Brief

Wireless LANs -
The End of the Beginning
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A note from the founders

Wireless LANS

First generation wireless LANs (WLANs) have been widely adopted in small offices and home offices. However, there are some issues that have limited the wide scale deployment of WLANs in the enterprise. As we reach the end of the first generation of WLANs, this IT Business Brief examines where we stand on these issues.

The brief begins with a discussion of alternative WLAN physical layers. This discussion is optimistic that soon the choice of the appropriate physical layer will be a non-issue. However, the discussion of wireless security points out that solving the security issues will more complex.

The brief then discusses three topics that I think are key to the broad acceptance of WLANs by enterprise customers. Those issues are coverage, ease of use, and Total Cost of Ownership. The brief also points out the potential movement to a centralized architecture as a way to reduce the cost and increase the manageability of WLANs.

This is our first IT Business Brief on the topic of WLANs. Future IT Business Briefs will explore these issues in greater detail.

- *Jim Metzler, Ashton, Metzler & Associates*

Wireless LANs - The End of the Beginning

- Craig J. Mathias, Farpoint Group
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For all their current popularity, wireless LANs (WLANs) are no overnight success. It's been 12 years since the IEEE (Institute of Electrical and Electronics Engineers) 802.11 effort, so important in the commercialization of WLANs, began. Today many IT staff and users alike are drowning in the alphabet soup of the standard, but few who try a WLAN voluntarily give it up. For all its complexity, the appeal of a mobile LAN is undeniable - and we're now seeing the expansion of WLAN service and coverage into a future that promises both transparency and near ubiquity. Indeed, we're now well past the early days of slow performance and lack of interoperability, and now well into the proliferation of WLANs into a broad range of applications.

We need to begin with an important baseline: while WLANs use radio to communicate, they are still, in fact, LANs. Anything that can be done on a traditional wired LAN can be done on a wireless LAN. And since modern IT infrastructures are LAN-centric, WLANs fit right into most installations with a minimum of fuss. There are, however, a couple of concerns that need to be mentioned here:

- **Choosing your PHY -** "PHY" means "physical layer", which is to say the specific frequency and radio technology used to communicate over the air. There are currently three major PHYs in 802.11, known as a, b, and g. Except for the fact the .11g is backwards-compatible with .11b, these are all distinct and otherwise incompatible with one another. Most people today use b, which is 11 Mbps, but it's now certain to be replaced by g over time. .11a operates in the relatively-uncrowded and more spacious 5 GHz. band, so we often recommend it for higher-throughput applications. In the long run, however, most client devices will incorporate all three standards, and you won't really need to worry about which one to buy, or which one to use at any given moment in time. While a and g can reach 54 Mbps, adequate for almost every potential application today, even faster PHYs are on the drawing board now.

- **Security -** The well-publicized security flaws in 802.11 have served as the number one reason why more enterprises have not installed a WLAN. The core flaws are now being fixed by the Wi-Fi Alliance, an industry trade group, with its Wireless Protected Access (WPA) specification, available in some products today, and by the 802.11 committee with 802.11i, a much more sophisticated package of functionality which covers both authentication and very powerful and secure encryption. Keep in mind, though, that these techniques only secure the airlink, that portion of the connection between a client and the infrastructure. If you want real security, consider using a virtual private network (VPN) - exactly what you'd do on your wired network. In this way the entire value chain between client and server are secured - so much so that you don't really need to worry about airlink security at all.

As we implied above, coverage and ease-of-use are key to the future success of WLANs. We've seen broad and significant adoption in residential and small-business applications, but volume deployment in enterprises of all sizes has been limited. While vertical (mostly bar-code and related data-collection) applications have been based on WLANs for well over a decade, most general-office users still need to look for a place to plug in, even if they use notebook computers. We're now seeing, however, the broad availability of mobile computers with WLANs as standard equipment, and Intel's Centrino effort promises to equip essentially every notebook with a wireless LAN as a standard feature over the next year. All those mobile users are going to be demanding a corresponding wireless infrastructure, and the rapidly falling prices of WLAN access points (which act like the cells in a cellular phone system and are used to implement the infrastructure side of a WLAN system) and related equipment will present a diminishing barrier to enterprise deployment.

We've seen in the past few years an increasing emphasis on the justification

of WLAN installations based on total cost of ownership (TCO). Note that TCO includes not just the cost of the equipment required, but also the cost to operate, manage, and maintain an installation over its life cycle. While smaller enterprises need not worry too much about TCO (or even ROI), most should take comfort in the relative ease of installation, the convenience and productivity that are inherent in wireless, and rapidly-improving management and administration tools. A new class of wireless LANs, based on what we call centralized architectures, replaces expensive access points with cheap APs and a rack-mounted controller that handles all WLAN-related management and operational tasks. Such an approach also allows smooth, manageable, and cost-effective growth, always a factor in networks of any form or size.

Finally, we need to mention the rapidly-expanding public-access WLAN opportunity, often called "hot sports". The major cellular carriers are now getting into this space in a big way, and we can see a time in the near future when you'll be able to use your wireless LAN devices (increasingly, we might add, WLAN-equipped PDAs and even cell phones) in your home, at the office, and in many places on the road with equal ease and uniformity, not to mention the high throughput that's unavailable in other wireless services. And down the road we're looking at voice-over-IP services on WLANs, as well as much higher performance. Today's 54 Mbps is likely to be augmented by throughput in excess of 100 Mbps within the next two years.
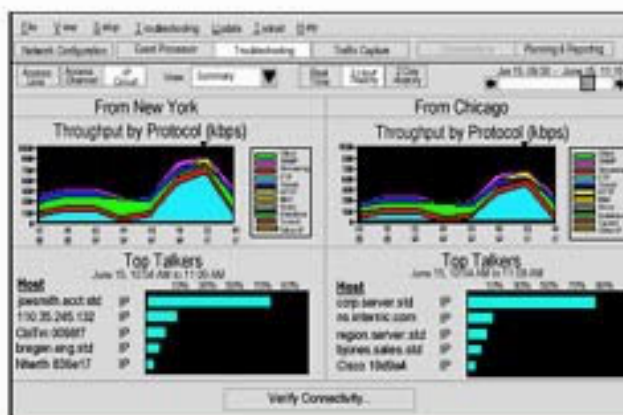
Who would have thought, even a few years ago, that WLANs would become so pervasive, capable, inexpensive, and readily available? We expect to see WLANs playing major roles in businesses of all sizes, and in all LAN-related applications. If you're not using a WLAN today, it's a sure bet that you will be in the near future - and, like me, you'll wonder how you ever got along without it.

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