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Demystifying WiMAX

WiMAX is coming, and along with it a great deal of vendor hype and operator confusion. Pyramid cuts through the clutter.

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*WiMAX stands for Worldwide Interoperability for Microwave Access and it is the latest, and most-hyped, generation of fixed wireless technology in years. Pyramid believes that WiMAX will succeed commercially, but not easily, nor as quickly as its chief proponent, Intel, would like. There is a great deal of vendor resistance, operator reluctance and general market confusion at work. Confusion is probably the greatest near-term obstacle; this Perspective (excerpted from the new Pyramid report **WiMAX and Wi-Fi: Unwiring The World**) clarifies a few key points.*

What is WiMAX?

What differentiates WiMAX from earlier broadband wireless access (BWA) iterations is *standardization*. Chipsets are currently custom-built for each BWA vendor, adding time and cost to the process. Intel and other chipmakers would like to bring scale to the market and BWA vendors are always interested in less expensive chipsets.

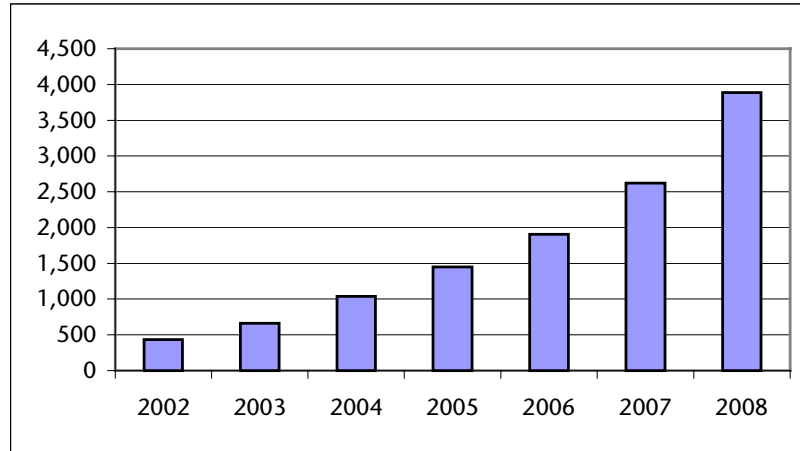
Similar to the way that the **Wi-Fi Alliance** enforced standards compliance among vendor members, the **WiMAX Forum** plans to do the same among its members; the standard the WiMAX Forum is promoting is IEEE 802.16. Compliance results in interoperability, which in turn results in plug-and-play products. In the years ahead, WiMAX vendors will no longer have to provide end-to-end solutions; they can specialize in base stations or on wireless modems. Specialization will result in competitive pricing and value-added innovations.

Regardless of WiMAX, the BWA industry is growing rapidly

We expect BWA connections to expand globally at a very healthy 27% CAGR between now and 2008. This is significantly greater than the prevailing single-digit growth rate of the telecoms industry as a whole, and this does not take into account any effect WiMAX may have on expanding the market.

The hottest regions for BWA growth in the years ahead are Asia and Central and Eastern Europe, which combined will add roughly 2m additional subscriber lines over the next five years.

Exhibit: Global Broadband Fixed Wireless Subscriber Lines (000)



Source: Pyramid Research.

WiMAX will succeed globally, albeit unevenly

WiMAX will succeed in every geographic market — but for different reasons. In emerging markets, operators are interested in using WiMAX for low-cost voice transport and delivery. In developed markets, WiMAX is all about broadband Internet access. Overall, the markets without any fixed infrastructure pose the greatest opportunities. ***WiMAX will become a disruptively inexpensive means of delivering high-speed data.***

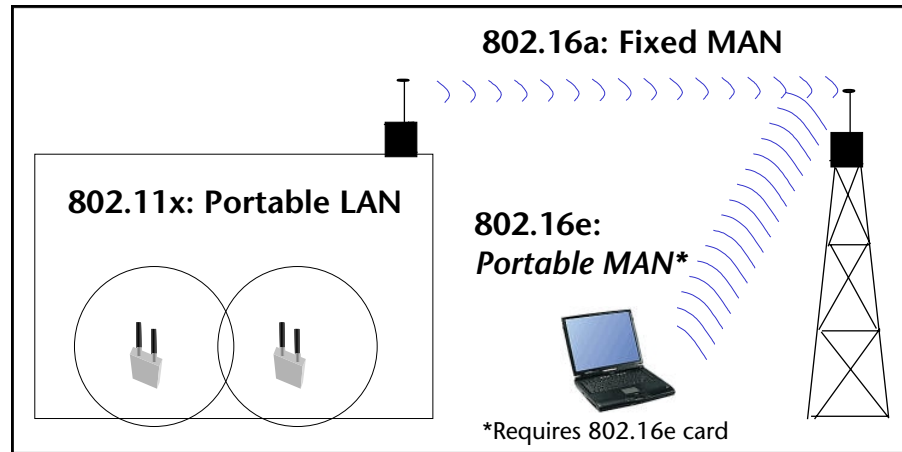
As the distinctions between fixed and mobile services blur, a chaotic mix of large fixed and wireless providers will pursue WiMAX deployments. The local and regional wireless ISPs are likely to be acquired as large carriers, particularly fixed, turn their attention to rural areas and enterprise accounts. For example, in the US we have seen ISPs compete successfully in moving enterprises from T1 lines to wireless lines; fixed carriers will eventually be forced to respond, either through similar deployments or acquisition.

WiMAX will evolve in two stages

When looking at WiMAX, it is important to view it as two distinct stages of evolution. The first stage will begin next year with products that cost and function a lot like current BWA equipment. The total fixed wireless market will not expand as a result of WiMAX; what we will see is a gradual migration of purchasing behavior from proprietary equipment to WiMAX equipment. Operators will be leery of adopting WiMAX equipment until prices drop to the point where they cannot afford to ignore WiMAX, which should occur in late 2005.

At about this same time, we will see the beginning of the second stage of WiMAX: the birth of metro-area portability. Once 802.16e is approved, laptops and other mobile devices may be embedded with WiMAX chipsets, so that the users can have Internet access anywhere within WiMAX zones. If this sounds a lot like 3G, in many ways it is. ***The second stage of WiMAX could be very disruptive to 3G operators and could drive a round of WiMAX network overlays in urban areas.*** Nevertheless, this won't happen until 2006 at the earliest. As shown in the following exhibit, WiMAX (stages one and two) and Wi-Fi will complement one another.

Exhibit: Overlapping Networks: 802.11x and 802.16a/e



Source: Pyramid Research.

Vendors: Either you're with WiMAX or you're not

WiMAX has split the vendor community into two not-so-evenly divided camps. Because BWA vendors see such dramatic (and painful) changes coming, many are lining up against WiMAX. Expect the chorus of pros and cons to grow louder and a bit nastier in the months ahead.

BWA vendors that have announced support for WiMAX include:

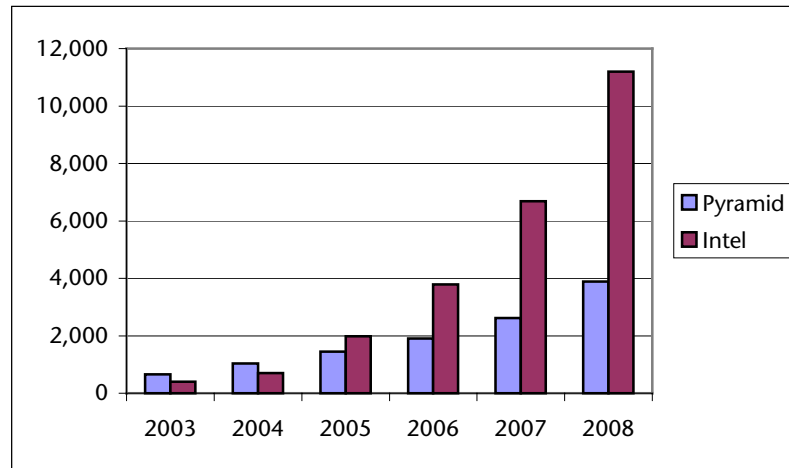
- Airspan Networks
- Alvarion
- Aperto Networks
- Redline Communications

We expect **Motorola** and **Proxim** to announce support for WiMAX in 2004. Ultimately, vendors will find it difficult to resist the commoditization of fixed wireless chipsets. Either they will embrace standardization and focus their energies on value-added features and services or focus on proprietary equipment geared toward niche applications and markets.

Intel is overestimating operator enthusiasm

As shown in the following exhibit, we believe that Intel has overestimated the eagerness of operators to embrace WiMAX equipment. Over the years, operators have been burned by BWA equipment that did not live up to expectations. None of the operators we spoke with for our report are eager to test first-generation WiMAX gear. This means that Intel and its vendor partners will need to be very aggressive on pricing and promotion to convince a few bold operators to deploy pilot projects.

Exhibit: Global Broadband Fixed Wireless Subscriber Lines: Pyramid Research Estimates vs. Intel Estimates (000)



Source: Pyramid Research.

Intel did not provide us with detailed explanations for their estimates. We can assume that Intel is projecting an increase in subscriber line penetration due to the success of second-stage WiMAX. Intel has said that it plans to begin embedding WiMAX (802.16e) support within laptop chipsets in 2005, although we believe 2006 is a more realistic date for 802.16e implementation. Also, keep in mind that our numbers do not take second-stage WiMAX into account; it could be that second-stage WiMAX does drive subscriber lines past 10m, but we're not optimistic that it will happen as quickly as Intel is.

WiMAX will bring broadband to the masses

At the end of the day, WiMAX is all about delivering low-cost broadband wireless access (BWA). Regardless of which vendor comes out on top, it is the millions of people in rural and developing markets who stand to gain the most from WiMAX.

Join Us On December 10th

Pyramid will be hosting a one-hour conference call at 10am EST on WiMAX. This call is free to all report purchasers and clients of the Pyramid Global Wi-Fi Advisory Service. The call is \$195 for everyone else. For more information, please contact Camila Eisenstadter at 617-494-1515 x246.

About the Report

This Perspective is excerpted from the new Pyramid report:

*WiMAX and Wi-Fi: Unwiring the World
Sizing the Opportunity, Analyzing the Players, Demystifying the Hype*
Published November 19th, 2003
71 pages; 53 exhibits

This report takes a practical look at WiMAX and how operators plan (or don't plan) to take advantage of it. Pyramid conducted more than 100 hours of interviews with vendors and operators to better understand WiMAX's impact around the globe. The report also includes six-year forecasts of broadband wireless subscribers for more than 40 countries.

To order, please contact Camila Eisenstadter at 617-494-1515 x246.

Additional Pyramid Research Resources

Worldwide Wi-Fi: A Global Survey of Wi-Fi and the Telecoms Industry, Pyramid Research Report, June 2003

Wi-Fi for Road Warriors: How Wi-Fi is Revolutionizing the Hotel Industry — and What's In Store for Other Industries, Pyramid Research Report, March 2003

QUESTIONS? COMMENTS?

- What's going to happen next?
- Where's the opportunity?
- **How could this affect you?**

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