802.16: What Might It Do For You?

There seems to be a never ending stream of new wireless networking standards emanating from IEEE, the Institute of Electrical and Electronics Engineers. However, Intel Corp. is leading the way to explore the possibilities of the IEEE 802.16 standard. It joined with Nokia, Fujitsu, Proxim, and a host of other companies to form the nonprofit corporation, WiMAX (World Interoperability for Microwave Access), to promote the 802.16 standard. [1] This standard would "provide coverage over an area of 30 miles, compared with the 300-foot range of the 802.11b wireless LANs now in common use" according to an Intel spokesman. [2] It also may support bandwidth of up to 70Mbps, far greater than the maximum of 11Mbps with 802.11b and 54Mbps with 802.11a/g. [3] This may make it an attractive substitute for wired connections if indeed it can provide both high speeds and long ranges. Finally, perhaps the greatest benefit of 802.16 is that it may not need a direct line of sight to provide a wireless signal to an end-user. [4] Currently, most fixed wireless networks require a line of sight that is not blocked by any other buildings or trees.

Because of these reported benefits, the 802.16 standard is being touted for its ability to be "a viable last-mile solution" by Intel Capital's Broadband and Wireless Networking Investment group. [5] Richard Giles speculates that building an 802.16 wireless network would cost about half the price of a traditional wired network. [6] Therefore, WiMAX may market to "high-speed networking companies that want to expand into areas such as rural districts or sparsely populated areas where it's not economically feasible to build DSL (digital subscriber line) or cable networks." [7] This would be a boon for many rural communities that have not been able to attract any high-speed Internet service providers because of the high start up cost of wired infrastructure. Furthermore, these Metropolitan Area Networks (MANs) could provide low-cost wireless access in urban areas, an additional competitor to DSL and cable broadband access.

Not only could 802.16 serve end-users, but it could also help replace wired connections that power today's 802.11b "hot-spots." WiMAX hopes to persuade "hot-spot" operators such as T-Mobile to replace the expensive wired connections of each "hot-spot" with an 802.16 network that connects all of its "hot-spots" in a given area with a wireless backbone. [8] Roger Marks, chairman of the 802.16 committee, says, "it's more efficient and more cost-effective to look for the ways 802.11 and 802.16 complement each other." [9] Depending on the strengths of both 802.11 and 802.16, they could work together to provide high quality wireless connections in a diverse array of places.

Lastly, the 802.16 standard could provide competition for cell phone providers, or perhaps just upgraded capabilities. Scott Wooley points out that supporters of third generation cell phone networks "grudgingly accept that Wi-Fi is much more efficient at short ranges" and are building flexibility into their networks accordingly. [10] T-Mobile, AT&T, and Verizon Wireless all plan to supplement their networks with Wi-Fi at short ranges to provide superior service [11]. Anything close to a nationwide Wi-Fi network, perhaps supported by the 802.16 standard, could either drastically improve cell phone service or serve as competition to current cell phone providers.

With all of the buzz, it seems that long-range Wi-Fi networks may be a great new networking possibility in a few years. The ability to provide both long-range data transfers with large bandwidth capabilities without the wires will make 802.16 very attractive to anyone thinking of building a wired network. However, it remains to be seen if any of the drawbacks of other wireless networks such as trees that block the line of sight or reduced signal during bad weather may dampen the excitement over MANs. If IEEE's 802.16 standard lives up to the hopes of the WiMAX coalition, the 802.16 wireless standard could become a major player in the future of wireless.

Notes

1. Abreu, Elinor Mills. "Intel, Others Form Broadband Wireless Nonprofit" Yahoo News. April 9, 2003. http://in.tech.yahoo.com/030408/137/237ci.html
2. Brewin, Bob. "Intel to Unveil 'Next Big Thing' in Wireless" ComputerWorld. April 8, 2003. http://www.computerworld.com/mobiletopics/mobile/story/0,10801,80145,00.html?SKC=mobile-80145
3. Abreu, Elinor Mills. "Intel, Others Form Broadband Wireless Nonprofit" Yahoo News. April 9, 2003. http://in.tech.yahoo.com/030408/137/237ci.html
4. Ibid.
5. Wirbel, Loring and Patrick Mannion. "IEEE 802.16 Spec Could Disrupt Wireless Landscape" Silicon Strategies. Janurary 30, 2003. http://www.siliconstrategies.com/story/OEG20030130S0055
6. Giles, Richard. "Wimax" April 9, 2003. http://www.richardgiles.net/blog/archives/000277.html
7. Shim, Richard and Ben Charny. "Gear Makers Team for Wireless Broadband" CNet. April 8, 2003. http://news.com.com/2100-1039-995994.html
8. Giles, Richard. "Wimax" April 9, 2003. http://www.richardgiles.net/blog/archives/000277.html
9. Wirbel, Loring and Patrick Mannion. "IEEE 802.16 Spec Could Disrupt Wireless Landscape" Silicon Strategies. Janurary 30, 2003. http://www.siliconstrategies.com/story/OEG20030130S0055
10. Wooley, Scott. "Wider-Fi" Yahoo News. March 31, 2003. http://story.news.yahoo.com/news?tmpl=story&u=/fo/20030331/bs_fo/8c104dac9a87d30f4f4d64af9fb0a1d1
11. Ibid.