

Application Note: 802.11n for Wi-Fi

A brief introduction to the IEEE standard and how AeroGuard™ offers the first pre-802.11n solution

August 30, 2004

The IEEE is in the emerging stages of next generation wireless performance criteria known as 802.11n. The goal is to define a 100Mbps WLAN throughput standard that enables wireless networking on par with conventional Fast Ethernet.

The IEEE is referring to 100Mbps for throughput as opposed to data rate. Throughput is what the user actually experiences when their mobile device is connected wirelessly to an Access Point, transferring files or accessing network resources. Data rate on the other hand is simply the potential data speed for the given protocol without considering the losses from overhead.

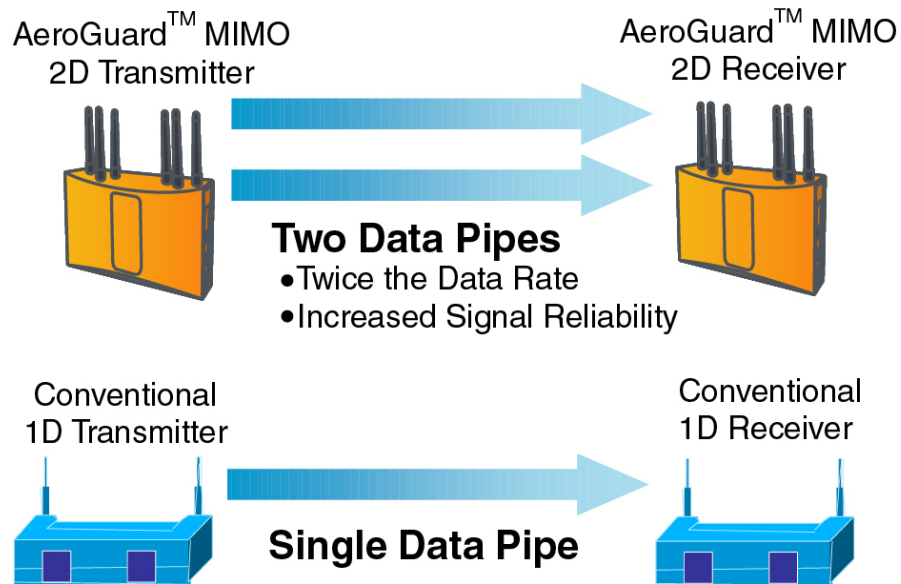
Why note the difference? For wireless protocols like 802.11b, software overhead can be quite significant, as high as 60 percent of the data throughput. What is specified as 11Mbps is actually transferring, at best, 6Mbps of user application data. For 802.11a and 802.11g, both specified at a 54Mbps data rate, the typical throughput is actually around 18-22Mbps.

Voice and Video Support

Add to this the typical auto-fallback of data rates as the distance increases from the AP and the sharing of remaining bandwidth among multiple clients, and there may be little significant value to a wireless network in a real business environment. Yet the demand for Wi-Fi networks to support even more bandwidth intensive applications like voice and video conferencing is giving rise to cutting edge technologies that make these applications a reality.

Says IEEE 802.11 Group Chair, Stuart Kerry, "We expect the new standard to meet the current demand for better WLAN service and allow a range of advanced uses. It might, for example, let wireless systems replace data-hungry wired networks such as those serving groups involved in computer-aided design."

SOHware has introduced AeroGuard™ MIMO solutions specifically to achieve performance parity between wired and wireless LANs. How AeroGuard™ achieves this has as much to do with the ability of MIMO technology to utilize objects in the environment to enhance reception as it does with increasing available bandwidth in both 2.4 and 5 GHz RF bands.



Multiple Input – Multiple Output

AeroGuard™ supports 108Mbps simultaneously in both 802.11g and 802.11a bands. MIMO technology within AeroGuard™ enables one channel to carry twice the data. MIMO stands for Multiple Input – Multiple Output, and refers to the unique antenna configuration and advanced RF processing that allow AeroGuard™ to receive and utilize the multiple data signals created by obstacles such as walls, partitions and furniture. In a real business environment, AeroGuard™ MIMO excels in performance where conventional Wi-Fi technology is hampered, making AeroGuard™ a far more realistic solution for IT VARs who deploy Wi-Fi for business clients.

A typical office application requiring 8 to 10 Access Points using conventional 802.11g technology may only require 2 AeroGuard™ MIMO Access Points to achieve full coverage, and with greater signal reliability for mobile clients such as Wi-Fi phones and other handheld devices.

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