



## **Bluesocket Position Paper**

### **Power over Ethernet (PoE) and 802.11n**

#### **Introduction**

Power over Ethernet (PoE) technology provides a means to transmit electrical power, along with data, to remote devices such as wireless LAN (WLAN) access points (APs) over an unmodified Ethernet network. One of the primary benefits of PoE, as it relates to wireless LAN deployments, is negating the need for AC power in the ceiling, thus simplifying and reducing the cost of wireless deployments.

With the emergence of the 802.11n WiFi standard and the bandwidth/coverage improvements 802.11n solutions deliver, however, a new power paradigm is emerging. As a result, one of the challenges product vendors are encountering is how to deliver "full feature" solutions within the current 802.3af power standard.

As with the introduction of all new technologies, competing vendors market their differences and attempt to shield customers from their deficiencies in order to position their solution to the market. Tactics include leveraging market presence to deliver misinformation and being intentionally vague in describing capabilities in order to buy time to re-architect product offerings. The current issue of powering full feature 802.11n access points is no different. A number of vendors have announced solutions and have begun making a variety of competing claims about their product capabilities, technology limitations and end-user options - leaving customers with more questions than answers.

#### **Bluesocket Position**

Bluesocket was the first wireless LAN (WLAN) vendor to deliver an enterprise-class MIMO Access Point in 2006 and we have since been working diligently with customers and partners to further understand their needs for standards-based, enterprise-class, high throughput wireless solutions. Having deployed thousands of MIMO access points across a variety of markets, our extensive real-world experience has resulted in significant market-leading technology advancements.

Building on this technology leadership position, Bluesocket recently announced the BSAP-1800 802.11n draft 2.0 Access Point. Among other feature-level advantages, we believe the BSAP-1800 to be the market's only 802.11n Access Point able to support the 802.3af power standard and deliver full-feature performance with a single-port Power over Ethernet (PoE) solution.

This first-to-market advantage provides a significant benefit to customers planning 802.11n deployments. Not only can customers leverage Bluesocket's extensive high throughput/coverage solution best practices, but they do not have to make the trade-offs between performance, security, and other critical wireless network functions that other vendors are forcing.

#### **The Facts**

The 802.3af standard provides that 12.95W is available at the input to the AP. It is important when designing 802.11n hardware to understand this power budget and select the appropriate

components that will allow the AP to meet these constraints including CPU type, amount of memory, radio module, etc. Along with hardware selection, software architecture is also important to consider. This will dictate the functionality that will be handled by the AP and will be an important factor in selecting an appropriate CPU.

Bluesocket's BSAP-1800 dual radio modules require less than 6W, which is much lower than what was anticipated by most AP developers. The balance of available power is more than enough for our base platform to provide the necessary processing power to handle simultaneous 802.11n/a and 802.11n/g streams.

Some of Bluesocket's competitors claim that "To perform at full capacity, dual radio 802.11n access points require greater than 12.95 watts" (See [http://blogs.cisco.com/wireless/2008/01/the\\_power\\_of\\_n.html](http://blogs.cisco.com/wireless/2008/01/the_power_of_n.html)). However, performing at "full capacity" is also very much hardware and chipset dependant. For example, test research indicates that an access point using a chipset from Marvell will not draw the same power as a chipset from by Atheros. Additionally, if vendors decide to consolidate the MAC/Baseband chips in a System-on-a-Chip (SoC), AP power consumption will be even lower.

If, however, the hardware a vendor has selected cannot stay within the power budget of 802.3af, they have no option but to force their customer to make critical performance and feature level trade-offs. One such trade-off is limiting the functionality of the AP to a 2x2 radio usage configuration, allowing only one radio to be enabled at a time, rather than 2x3 or full 3x3 usage configuration. Due to power limitations, another trade-off some vendors are forcing customers to implement is limiting the CPU speed, which results in less power consumption but causes the AP to be CPU bound.

## **Conclusion**

Bluesocket's extensive real-world experience with high throughput/coverage wireless solutions has resulted in significant market-leading technology advancements including the market's only 802.11n Access Point able to support the 802.3af power standard and deliver full-feature performance with a single-port Power over Ethernet (PoE) solution.

With the BSAP-1800 802.11n draft 2.0 compliant Access Point from Bluesocket, customers do not have to make the trade-offs between performance, security, and other critical wireless network functions forced by other vendors.

For more information, visit our website at [www.bluesocket.com](http://www.bluesocket.com)

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