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ONE LESS ENTERPRISE IOT ROADBLOCK WITH WIRELESS

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THE BOTTOM LINE

Troubles with wireless capability have plagued enterprise IoT (Internet of things) implementation, but new technology and competition between WiFi and Bluetooth are driving toward an answer. Currently, there are issues with both wireless networks when it comes to IoT, but WiFi HaLow and Bluetooth 5 are both aimed at increasing their respective market shares in the upcoming boom of connected devices. Enterprise IoT could be the first to benefit from these new advances, so any company evaluating network solutions should keep an eye on the progress of these solutions.

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OVERVIEW

For businesses trying to ramp up their analytics capabilities with IoT, there have been many roadblocks. They need specific goals for what data they will collect, how they will analyze it, and how it will make their business better, as well as software to support that plan. On top of that, wireless networks have not been able to sustain the number or range of IoT devices needed in a business setting. The first step to any successful IoT deployment is smoothly functioning hardware.

In the past, Bluetooth and WiFi have existed in mostly separate markets because they operate best on two different classes of devices. WiFi operates on higher bandwidths like 2.4GHz and 5GHz, and can use tighter security encryption and send much larger amounts of data. The downside is that it requires a lot of power from the devices using it and connects devices through a hub or router. While it has relatively long range, long-distance functionality also puts more drain on device

batteries. For personal computers that are plugged in or have a large rechargeable battery, power consumption is not a big problem though.

Bluetooth, on the other hand, serves a mostly different purpose. It has significantly lower power usage, making it ideal for devices like a wireless keyboard or headset. Although it lacks range, high-level security encryption, and can generally only connect devices one-to-one, keyboards or headsets don't need these features.

	WiFi	Bluetooth 4	WiFi HaLow	Bluetooth 5
Bandwidth	2.4 GHz; 5GHz	2.4Ghz	900MHz	2.4GHz
Power Usage	High	Low	Low	Low
Security Encryption	Compatible	Not Compatible	Compatible	Compatible, difficult for business use
Range (w/o obstructions)	~300 feet	~30-100 feet	~1000 feet	~1000 feet

With IoT, however, both networks have problems. IoT devices like smart home appliances, wearables, or even driverless cars need long range, low battery usage, and the ability to connect many devices together. Responding to these issues, WiFi has announced plans for a new 900MHz network they call HaLow, but it will not be available until at least early 2018. Additionally, the 900MHz network is not available for commercial use in some countries, which could hinder expansion in places like Europe. Bluetooth has also released the latest edition of their core network, Bluetooth 5, which is up and running now as the standard for new Bluetooth device certification.

WHY IT MATTERS

With both WiFi and Bluetooth competing for the top spot in IoT connectivity, network capabilities are developing faster than ever before. There is a larger variety of connected devices now with greater needs in terms of speed, range, security, and power. As IoT begins to be incorporated in business data collection and analytics, the biggest issue will be the ability for software to compile and meaningfully arrange the data. Hardware, therefore, needs to be reliable and straightforward. Both new

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networks provide longer range, lower power use, and the ability to connect many devices.

Network improvement will also benefit those who only use a few devices. While Bluetooth 5 is designed specifically with IoT in mind, its upgraded speed and range will benefit any device incorporating its new hardware. Similarly for HaLow, lower power usage with high performance means we could see a rise in devices that are typically only Bluetooth compatible switching over to WiFi, or providing the option of dual compatibility.

ADVANTAGES FOR ENTERPRISE

While many of the functionality improvements of these networks focus on personal IoT devices like phones, appliances, and wearables, enterprise IoT actually stands to gain the most from the developments. Issues of range and power consumption are multiplied in a business environment where there are hundreds of devices in a large area that all need to aggregate data to a central hub. Dramatically increasing the range of the network may have little impact on the average homeowner, but could be the difference between being able to deploy a previously unusable enterprise IoT system in a business setting.

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Importantly, businesses that are investing in enterprise IoT do not have the luxury of slowly building a network of devices or using both Bluetooth and WiFi together. They need to make large investments in hardware up front and will have different needs on a case by case basis. Nucleus expects that the competition between these two networks will lead to more choices for business users with unique IoT setups and goals.

LOOKING AHEAD

Neither network is perfect though. Although Bluetooth 5 now supports encryption, businesses—where it matters most—have struggled to integrate it into their own security protocols. HaLow, on the other hand, will still be in development for another year at least, meaning that Bluetooth will be able to deploy and troubleshoot Bluetooth 5 systems and devices in the interim.

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CONCLUSION

The newfound competition over IoT wireless priority has generated two new network options that could solve issues with both personal and enterprise IoT implementation. Bluetooth has an undeniable edge in the short term with new devices being certified for compatibility right now. The development of third party Bluetooth equipment, such as Cassia's Bluetooth router, also supports their immediate advantage. If Bluetooth is able to solve any security issues for businesses, it will have a huge head start over the comparable HaLow network.

For WiFi, success hinges on their ability to get manufacturers to commit to the HaLow network now so that they can hit the ground running once certification is available. In either case, businesses should monitor the progress of these networks as they design their IoT investment plans. With increasing focus on enterprise functionality, new developments over the next year will increase the overall effectiveness of IoT devices while also making implementation possible for specific enterprise use scenarios.

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