

Wave 2 Wi-Fi – Worthwhile Investment or Unnecessary Half-Step?

By Neil Patel, Director European Marketing and Business Development

802.11ac Wave 2 is the latest Wi-Fi standard. When its predecessor, the now widely adopted 802.11ac Wave 1, first launched in 2011, it brought a host of advantages for businesses and consumers alike. Improved power management, higher capacity and lower latency provided a higher performance network and made Wave 1 the gold standard it is today.

In many respects, Wave 2 builds upon the success of its predecessor, whilst also bringing additional features benefits for business networks, particularly for enterprises which transfer large volumes of data.

That said, Wave 2's performance boost looks less significant when compared to those of the next generational leap, 802.11ax (ax). Due in 2019, demos show five to 10 times performance improvement over Wave 1, and four times over Wave 2, begging the question: is the upgrade to Wave 2 worthwhile or should you hold out for ax?

Most business owners aren't networking experts, and it would be easy for them to assume that the extra MHz of bandwidth and Gbps of throughput that ax will offer over Wave 2 as essential for their business. However, to write Wave 2 off in favour of the promises of ax could, in many situations, prove a lost opportunity. In this article, I outline benefits of Wave 2, the scenarios in which it's still viable, and those where, perhaps, it's best to hold out for ax.

Wave 2 vs Ax – the numbers game

We've established that Wave 2 is not as huge a leap forward as 802.11ax aims to be in a couple of years' time, but that doesn't mean it's not worthwhile. Chief amongst the significant additions to Wave 2 is support for multi-user multiple input, multiple output (MU-MIMO). This enables Wave 2 access points to send and receive data to and from multiple devices simultaneously, providing a significant boost in efficiency. In more layman's terms, a single Wave 2 access point acts the same as having multiple Wave 1 access points.

As such, MU-MIMO improves the overall connectivity experience by distributing data more efficiently. Simultaneous smartphone, tablet and laptop use is already prevalent in the modern workplace, so this extra capacity is a real bonus.

802.11ax will significantly up the ante with orthogonal frequency division multiple access (OFDMA), an ugly acronym that means that, rather than having multiple channels, each channel is chopped up into hundreds of smaller sub-channels with different frequencies. What this boils down to is that up to 30 clients can share a channel rather than having to take turns broadcasting and listening on each.

Although Wave 2 accommodates channel widths up to 160MHz, a dramatic increase over Wave 1 which topped out at 80MHz, ax's wider and multiple channels significantly boost throughput. For example, if we assume the throughput is increased by 4x with 160 MHz channels (a conservative estimate), the speed of a single 802.11ax stream will be 3.5Gbps. This compares with 866 Mbps for a single 802.11ac connection. That's a significant boost, and one that's hard to ignore.

To Ax or not to Ax?

It's difficult to not get excited by the advances that 802.11ax promises over the existing Wave 2 standard. However, before you plan for an ax deployment upon its release, it's best to consider why these features have been developed, and whether they're necessary for your business.

Ax has been designed to deal with incredibly high density networks. Its super high data rate and bi-directional MU-MIMO capabilities make 802.11ax ideal for very dense indoor and outdoor environments, such as conferences, apartment blocks and hotspots. Unless your enterprise network fits the mould of one of these use cases, you likely wouldn't see significant benefits from ax.

Wave 2 is available now and, since its initial launch in 2016, we have seen the pricing of Wave 2 chipsets dropping to a point where they are actually more cost effective than their predecessors.

For smaller businesses still using a/b/g/n gear, and in need of an upgrade, don't hold out for ax. The speed boost provided by Wave 2 will almost certainly be significant enough to see you through the foreseeable future.

However, if you're a very large enterprise, or a hotel or apartment block manager looking at a fresh Wi-Fi deployment in the next year or so, it might be worth holding off until ax. If you're

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unsure what the best decision for your particular situation is, talk to your Wi-Fi vendor. All the major wireless LAN suppliers are planning to support 802.11ax, and they should help guide you to the best decision.



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