

802.11ac Customer Use Cases



The dependence on Wi-Fi for everyday business has put more demands on enterprise networks. More and more, networks need to provide faster speeds and more Wi-Fi capacity than ever before.

Challenges ranging from bring-your-own-device (BYOD) access to the growth of bandwidth-hungry applications such as video are making an impact on all industries.

To address the growing demand for bandwidth and the need for speed, the IEEE has come up with the next generation of Wi-Fi: 802.11ac. The first wave of the 802.11ac standard will offer a three-fold performance increase over 802.11n. Through a variety of enhancements, 802.11ac offers:

- Wider channels: 80-MHz channel width when compared to 802.11n MHz. Wider channels provide more bandwidth.
- An increase in spatial streams: The 802.11ac standard allows for up to eight spatial streams, compared to the four offered by 802.11n.
- Ability to operate in the less crowded 5-GHz band: Most Wi-Fi today uses the 2.4-GHz band, in which clients are susceptible to interference from other clients. The 2.4-GHz band also has fewer channels than the 5-GHz space.

With these enhancements, 802.11ac has taken the best of the previous Wi-Fi standard, 802.11n, and has improved on it. The overall result of these improvements is that Wi-Fi networks will provide noticeably faster connectivity, which will enable an enhanced quality of experience for the end user. When connecting to a wireless network that supports 802.11ac, the user will notice a wired-like experience at higher speed. Because of the increase in speed, clients get on and off the network much more quickly, which not only preserves the battery life of most 802.11ac clients but also allows more airtime for other legacy devices.

Overall, the advantages and reliability of 802.11ac will significantly change how wireless networks will be used moving forward. However, as with any emerging technology, the adoption will come in stages. Different businesses and organizations rely upon wireless networks in specific ways and have different requirements and applications that are designed specifically for their needs. With this in mind, let's look at how 802.11ac will be used in some of these industries.

Healthcare



Most businesses are seeing demand for more bandwidth on a reliable wireless network. This is especially true in healthcare, where Wi-Fi is increasingly used for mission-critical applications. These include cardiac and radiology imaging, telemedicine, electronic medical record procedures, handheld scanners, and voice over IP. To help ensure that these applications run smoothly and securely, the healthcare industry requires high-performing, high-capacity, and pervasive wireless connectivity.

Use of the less crowded 5-GHz band in 802.11ac reduces interference, so medical applications can stream painlessly to doctors' tablets. With three times the speed of 802.11n, 802.11ac also creates seamless, instantaneous connectivity as well as optimized battery life for 802.11ac clients. Healthcare providers can stream large radiology and cardiology imaging files directly to the patient's bedside rather than a specific image viewing room, which is typically used today. Lastly, 802.11ac brings greater capacity for more reliable performance of doctor-patient telepresence and video applications.



Higher Education



As more and more 802.11ac client devices become available, the demand will grow to add 802.11ac to networks. This is especially true for higher education, where students, who are typically early adopters of the latest gadgets and technology, will be showing up on campus with their 802.11ac-enabled laptops, smartphones, and tablets. Their desire to connect these devices to the network is one of the reasons that IT directors in higher education support the fifth generation of Wi-Fi, 802.11ac, in their networks.

The adoption of 802.11ac clients is not the only reason to deploy 802.11ac in the network. Many higher education networks are seeing a dramatic increase in wireless network use, including concurrent connections, which in many cases result in the need to deploy more access points to handle the bandwidth and connection demand. 802.11ac will enable campuses to handle the increased demand via a higher data rate, wider channels, and more efficient modulation. Higher speeds mean that 802.11ac clients can get on and off the network more quickly, leaving more wireless airtime for other clients. 802.11ac will provide a relief from the bandwidth demands while also making the overall Wi-Fi network more efficient.

K-12 Education



K-12 education has the same needs typical of most organizations. Increased use of video in the classroom is creating a need for more bandwidth. A collaborative classroom, in which that day's lesson is streamed via video from across the country or the world, is becoming more and more prevalent. The additional use of laptops, tablets, and other Wi-Fi-connected devices in the lesson plan is on the rise as well. The ability for K-12 IT departments to address these demands with 802.11ac will provide the extra bandwidth needed for these and other uses.



Service Provider



One of the biggest benefits that service providers will get from 802.11ac will be related to hotspots. Hotspots have been a popular solution for service providers, because users can pay a subscription fee to use the Wi-Fi network, which generates revenue. Hotspots also provide a way to offload data flow to the Wi-Fi network rather than using the 3G or LTE network. By introducing 802.11ac into hotspots, service providers can differentiate themselves from the competition. With more and more 802.11ac devices flooding the market, customers may choose to pay extra to use their new 802.11ac-enabled tablet or laptop and receive the higher bandwidth that is offered. Hotspot customers will also get a much better experience with high-bandwidth applications such as Netflix and Hulu Plus, and the service provider can generate extra revenue by charging a premium for the service. In addition, the continued shift to 5 GHz in 802.11ac will relieve congestion on the already crowded 2.4-GHz band that is common in many hotspot deployments. Using 802.11ac, service providers will be able to offer their customers more bandwidth on a more efficient network, while having the ability to generate more revenue.

Summary

Deploying 802.11ac can provide many benefits to those using a wireless network. Keep in mind, however, that with the increased bandwidth capabilities on the network come more issues that you must consider. As a leader in wireless networks, Cisco provides a comprehensive 802.11ac solution that will help ensure that you receive the benefits of 802.11ac while continuing to enjoy the reliability of your wireless network. The Cisco® [Aironet® 3600 Series Access Points](#) offer an 802.11ac module, and the Cisco [Aironet 3700 Series Access Points](#) include an integrated 802.11ac radio. It is important to be aware of interference, density, and the need to support legacy clients. With Cisco CleanAir®, ClientLink, and High Density Experience technology, you can be confident that your network will maintain its reliability while benefiting from the capabilities of 802.11ac.

For more information, visit: www.cisco.com/go/80211ac.