A Review Paper on "5g Wi-Fi Ac Technology"

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Abstract— 802.11ac, the upcoming standard from the IEEE, is like the film The Godfather Part II. It makes it even better. 802.11ac is a very fast and highly scalable version of 802.11n. It contains the freedom of wireless with the powers of Gigabit Ethernet. Wireless LOCAL AREA NETWORK sites will see drastic improvements in the number of users supported by a single access point , a flawless experience for each user, and more bandwidth available for a higher number of parallel video streaming. Even when the network is not fully crowded, users see a benefit, that their file downloads and email synchronization happen at low lag gigabit speeds. Also, system battery life is increased, since the system's Wi-Fi connection can wake up, receive and transmit data with its access protocol, and then get back to dozing much more quickly. 802.11ac achieves its raw speed increased by insisting on three different parameter. More channel bonding, hiked from a max. limit of 40 Megahertz with 802.11n up to 80 or even 160 Megahertz (for speed hikes of 117 or 333 percent, respectively). Denser modulation now uses 256 quadrature amplitude modulation (QAM), up from 64 QAM in 802.11n (for a 33% speed burst at shorter, yet still usable, ranges). There are some substantial differences between 2.4 GHz and 5 GHz and what you can do with them. As we know, the 2.4Ghz wireless band is a very congested place because it's much used by most wireless devices beyond laptops, phones, and tablets. The lower-end wireless spectrum is also used by other devices like cordless phones, garage door openers, baby monitors, and much more. By contrast, the 5 GHz band is more ideally suited for data devices such as your laptop, phone, or tablet because it can transmit higher amounts of data, and it's naturally less congested. 5 GHz does have a downside in that it is less able to penetrate solid walls and objects, so if you go outside your house to use your phone, your connection might drop.

Key words: QAM, MIMO, CCA

I. INTRODUCTION

First, 802.11ac is an evolution of 802.11n. If you are already known with the channel bonding, MIMO, and aggregation introduced by 802.11n, and you don't need a refresher.802.11ac is an evolution improvement to 802.11n. One of the aim of 802.11ac is to provide higher levels of performance that are correspondent along with Gigabit Ethernet network structure: A "instantaneous" data transfer experience pipe or bandwidth broad enough, that provides a high quality of experience (QoE) is straight forward. In the user premises, the main aim is multiple channels of high-definition (HD) data delivered to all areas of the house. The enterprise has different challenges, Delivering servers with enterprise-class speeds and latencies High-density environments with scores of clients per access protocol. The increased adoption of video streaming 802.11ac is delivering an outstanding experience to each and every user served by an AP, even under high loads. Meanwhile, 802.11 is inseperable to a broad range of devices, and some of them are high cost, power, and volume constrained. One antenna is routine for these devices, yet 802.11ac must still deliver high efficiency.

The one thing that 802.11ac has in its favor is the evolutionary drastic improvement to advance silicon technology over the past six years.

On the other hand, if you like to work outside or live in a large house with many walls between you and your wireless router, then connecting to the 2.4 GHz band might be your best option.

Keep in mind, 5 GHz is ideal for connecting in smaller, open spaces, and you'll experience better data transmission rates but once you start to spread out and move away from the Internet access point, your results may begin to diminish. Knowing which network to use and when is going to ultimately win the day if you start experiencing weak or slow data transmission, or if the signal simply cuts out altogether.

Overall, it's a good idea to put all your devices on the 5 GHz band if they're close to the router or have a clear line-of-sight (or just a thin wall or two between them). You'll experience less congestion and will be able to then use the 2.4 GHz network only as needed or if required.

II. APPLICATIONS

The ability to have overlapping APs but different primary channels is made possible by:
The hiked secondary CCA thresholds compulsory by 802.11ac, which are up to 13 dB more stringent than secondary CCA thresholds defined by 802.11n
The capability of 80-MHz channels is markedly hiked over narrower bandwidths. This offers a lot of value in many typical cases a few users transferring a lot of traffic associated with a 40-MHz access protocols are limited to 802.11n's 300 or 450 MEGA BITS/SECOND. This is true even if the APs on the nearby 40 MHz channel are all lightly loaded. With the wider channel, more users get to transfer their data quickly and can complete their transmissions that much fast. Overall, less battery is consumed, and other users don't have to wait long (for better quality of service [QoS]). This discussion comes under the hood of "statistical multiplexing," in which greater multiplexing is much more efficient for heavy traffic loads.

III. CONCLUSION

1) 5GHz has a shorter range in comparison to 2.4GHz
2) 5GHz is very less crowded (and so less congested) than 2.4GHz
3) 5GHz have capability of higher speeds than 2.4GHz
4) Routers supporting 5GHz Wi-Fi 802.11ac are typically more advanced and have features like: Dynamic Frequency Selection, Beam forming and Transmitting Power Control

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