

# Wi-Fi Is Getting an Important Upgrade

Why 6 GHz Wi-Fi that is coming soon may be a huge deal in Student Housing

By Andrew Marshall, Campus Technologies Inc, May 2020

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For the last few years, the underlying technology that has been used in a Student Housing setting has been the 802.11ac Wave 2 standard ('Wave 2' in shorthand). It's highly reliable, most residents have compatible devices and it's very much been the gold standard for residential Wi-Fi in our industry, although densities have changed from a 1:4 Access Point to Bed ratio to 1:2 in recent years. The most recent change to Wi-Fi was 802.11ax ('ax' or Wi-Fi 6 in shorthand) wasn't really needed in a residential setting in Student Housing, although it did find some acceptance in community areas where

there might be a very high density of devices needing to connect at once.

All in all, we have reached a very stable and mature technology plateau that is well understood, reasonably priced and highly reliable by using Wave 2.

## THAT IS ALL ABOUT TO CHANGE

On April the 23rd of this year, the [FCC approved](#) a large amount of radio spectrum in the 6 GHz band - never used before for Wi-Fi - to be allocated for unlicensed use. Why is this important? Technically, it means less interference and more bandwidth for Wi-Fi that uses this frequency. Practically, it means the gold standard we have been using to date may soon become obsolete.

Generation/IEEE Standard	Maximum Linkrate	Adopted	Frequency
WiFi 6E (802.11ax)	868-9608 Mbit/s	end of 2020	2.4/5/6 GHz
WiFi 6 (802.11ax)	600-1580 Mbit/s	2019	2.4/5 GHz
WiFi 5 (802.11ac)	433-6933 Mbit/s	2014	5 GHz
WiFi 4 (802.11n)	72-600 Mbit/s	2009	2.4/5 GHz
WiFi 3 (802.11g)	3-54 Mbit/s	2003	2.4 GHz
WiFi 2 (802.11a)	1.5-54 Mbit/s	1999	5 GHz
WiFi 1 (802.11b)	1-11 Mbit/s	1999	2.4 GHz

This new 6GHz Wi-Fi band is being generally referred to as Wi-Fi 6E, not to be confused with Wi-Fi 6 which has been around a while. It will mean new Wireless Access Points, new adapters in mobile and fixed devices, and probably require a greater ratio of AP's to beds.

## SO, WHAT SHOULD YOU DO?

1. Make sure any wired network you are building for new construction will handle the bandwidths required by Wi-Fi 6E access points.

# JUST TO BE CLEAR – WI-FI 6 IS NOT 6 GHz. WI-FI 6E IS 6GHz

The largest impact may well be the delivery of enough bandwidth to each Access Point as the gold-standard 1 Gigabit per second wired Ethernet connections prevalent in Student Housing will not carry enough bandwidth to use the maximum capacity of a Wi-Fi 6E Access Point.

Wi-Fi 6E products are not available yet, with the first expected in late 2020 or early 2021. It will take a couple of years after that for devices (smart phones, tablets, smart TV's and so on) with Wi-Fi 6E capability to be present in most student bedrooms in any significant number. We also do not know how these Wi-Fi 6E 6GHz products will be priced yet.

2. Make sure your budgets for existing networks consider an access point refresh around 2022-2023 to accommodate Wi-Fi 6E.

**Andrew Marshall**  
Campus Technologies Inc  
(215) 243-7010  
[amarshall@campustech.net](mailto:amarshall@campustech.net)  
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