



HOT TECH TRENDS

By Dave Altavilla, Contributor, Computerworld
OCT 14, 2019 5:27 AM PDT

OPINION

What is 5G today and what the future holds

When it comes to 5G, the word “disruptive” is an understatement.

If you ask the average person what they know about 5G technology, the first thing that will pop into their head will likely be something to do with cellphone technology. And if you consider the 2019 rollout of 5G thus far, perhaps that wouldn't be too far off the mark. The average Jane or Joe would also likely recall that 5G is a faster follow-on technology to 4G LTE, and that wouldn't be all that inaccurate either.

However, what 5G offers today, how it's deployed and what the 5G landscape is going to look like in the next 2–3 years, will be vastly different. In fact, at the risk of using clichés, indeed 5G NR (New Radio) technology is poised to be “disruptive.” That said, this next generation of wireless network technology will also be an enabler across a myriad of industries and applications, and in all likelihood spur all-new use cases as well.

There are multiple different types of 5G technology that will be deployed by the various carriers, but in short, the technology is all about much larger slices of available spectrum and massive scale in capacity. The FCC defines 5G spectrum in four primary bands, Low-band between 600–900MHz, Mid-band between 2.5–4.2GHz also known as Sub-6, frequencies above 24GHz, otherwise known as millimeter Wave or mmWave, and finally what it calls Unlicensed spectrum, that can be accessed for a variety of dedicated uses including 5G. In terms of licensed spectrum, Low, Mid and mmWave bands will be deployed by various carriers, with T-Mobile and Sprint grabbing a large chunk of Low and Mid-bands for longer reach, and AT&T and Verizon claiming higher frequencies for higher speeds. Ultimately, all of these technologies will coexist with and require 4G networks to operate initially in a 5G NSA (Non-Stand-Alone) implementation, with standalone deployments coming later down the line. There's a lot to digest and unpack here but what's really important about 5G are its massive advancements in capacity, lower latency and throughput.

[Related: AR in the enterprise: Tips for a better augmented reality app]

All 5G is not the same – Sub-6, mmWave and Unlicensed Spectrum

Cookies and other technologies are used on this site to offer users the best experience of relevant content, information and advertising. California consumers have the right to adjust what data we and our partners collect. [Privacy Policy](#).

I understand

Do Not Sell My Personal Info



Without getting too deep into the weeds with respect to Low-band, Sub-6 and mmWave, at a high level, Low and Mid-band (Sub-6) 5G generally has longer reach and coverage, whereas mmWave offers higher capacity and faster multi-gigabit performance, but requires a denser population of cellular base deployment because its reach is only a few hundred meters and it has challenges with penetrating walls. The reality will be that the US will deploy a mix of 5G technologies with AT&T and Verizon driving mmWave deployments initially, while T-Mobile and Sprint appear to be driving low-band spectrum for a coverage play. Regardless, the other intrinsic benefit of 5G technology in general is latency. Where 4G can have ping times in the range of 25 - 50ms or so, 5G has the promise of single digit millisecond latency. And when it comes to next generation 5G applications, latency will be critical.

ADVERTISING

[Learn More](#)



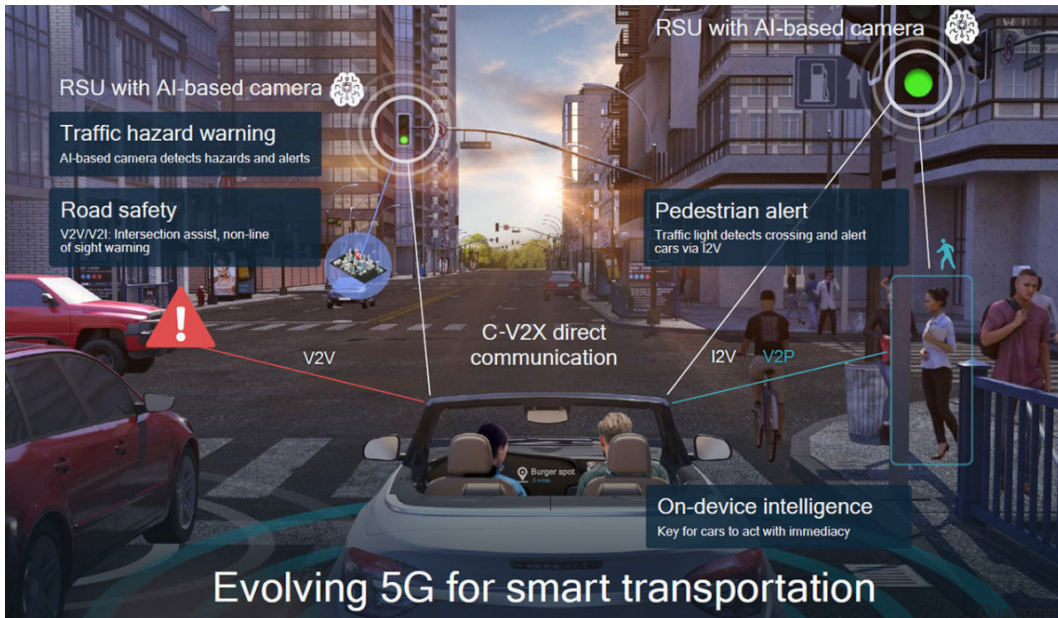
5G could enable smart city infrastructure and truly autonomous

Cookies and other technologies are used on this site to offer users the best experience of relevant content, information and advertising. California consumers have the right to adjust what data we and our partners collect. [Privacy Policy](#).

I understand

Do Not Sell My Personal Info

Qualcomm specifically is on the forefront of 5G technologies, with end-to-end silicon solutions from 5G client handset devices like Samsung's Galaxy S10 and Note 10 series, to base station and fixed wireless customer premise solutions. I spent time with the company recently learning how 5G will quite literally reshape the high-speed broadband service industry for consumers and the enterprise. It will also help enable technology innovation that will require ultra-high capacity, low latency networks to be fully realized, for example smart city applications and autonomous vehicles. When you think of the city of the future, with a significant number of autonomous cars driving around, there are a number of wireless solutions that will need to be deployed to allow this futuristic vision to become a reality.



Beyond just AI on edge devices for machine vision and machine learning, a myriad of IoT device technologies can all be integrated via 5G connectivity to enable safer, more efficient smart transportation services. Traffic signals that communicate with vehicles and vehicles that not only communicate with each other but to “everything” around them or (C-V2X, as Qualcomm likes to strap acronyms around everything), will allow safer autonomous vehicles and could, in theory at least, alleviate traffic congestion and minimize the possibility of an accident. I’ll believe the traffic benefits when I see them of course, having navigated far too often in Boston and New York gridlock, but you can see how “rubber-necking” could be a thing of the past, if your vehicle is being signaled to keep it moving. In short, C-V2X is one of the many applications that will help be enabled by 5G NR technologies, allowing vehicle-to-vehicle, vehicle-to-pedestrian and vehicle-to-infrastructure communication over a dedicated 5.9GHz spectrum network. Qualcomm has C-V2X chipsets solutions already available that are compatible with 5G technologies as well as Advanced Driver Assistance Systems (ASDA) sensors, as part of a platform solution.

Cookies and other technologies are used on this site to offer users the best experience of relevant content, information and advertising. California consumers have the right to adjust what data we and our partners collect. [Privacy Policy](#).


I understand


es

Do Not Sell My Personal Info

Another industry, beyond just faster smartphones, that 5G NR technologies will reshape will be residential and commercial broadband internet services. Especially in under-served areas that have issues with last mile connectivity and legacy cable/fiber internet operators, 5G technologies will enable wireless gigabit and multi-gigabit internet services in your home or office, without the need for WiFi, or in-conjunction with WiFi-6, and always-connected. 5G fixed wireless access is one of my favorite burgeoning areas of the new technology, as it will enable new levels of competition between carriers and ISPs, as well as new services with much lower latency, high speed connections for cloud computing, gaming and more. Gaming services like Google Stadia, Microsoft xCloud and NVIDIA GeForce NOW will thrive when 5G fixed wireless access becomes a reality.

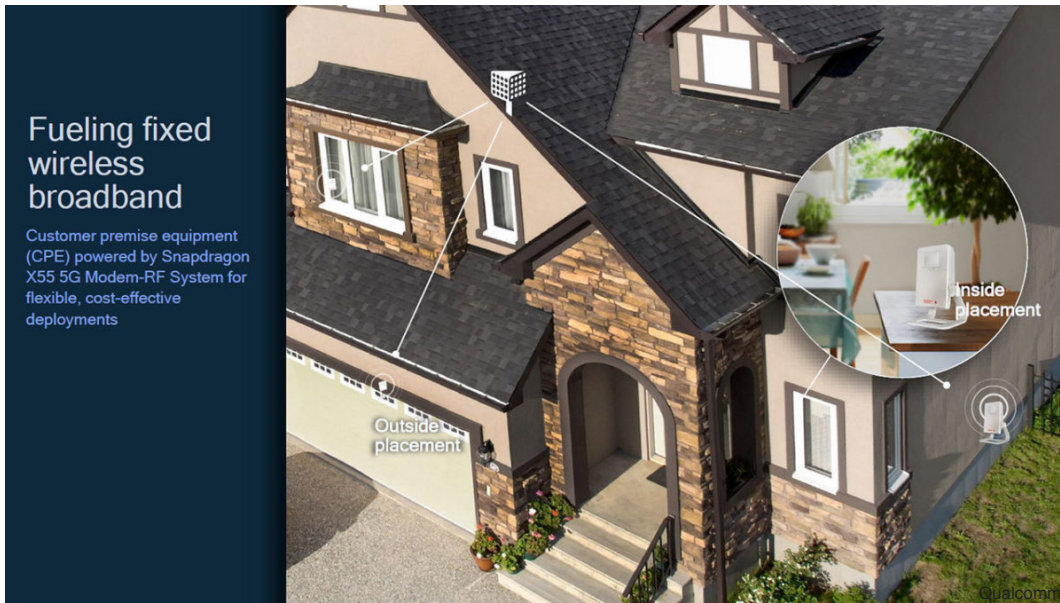
RECOMMENDED WHITEPAPERS

 Storage as a Service — Keystone

 Why Dynamic Protection Matters: The Rise of Risk-Driven Human-Centric Security



Data and AI Virtual Forum



5G fixed wireless applications will initially rely often on fiber broadband backhaul connections. The 5G tower will connect to legacy high-speed fiber networks that currently power the internet backbone, but then transmit to customer premise equipment over 5G Sub-6 and mmWave connections, wirelessly.

Qualcomm is announcing today more than 30 global OEM partners like Linksys, Netgear, Nokia, OPPO

Cookies and other technologies are used on this site to offer users the best experience of relevant content, information and advertising. California consumers have the right to adjust what data we and our partners collect. [Privacy Policy](#).

I understand

Do Not Sell My Personal Info

less CPE
it carriers like
u realize how
nnectivity

and competitive landscape will take shape, though you can be sure the subscription packages bundled with content and services will continue to evolve as well. Monetizing 5G services will be interesting or perhaps frightening to watch, depending on your perspective.



SponsoredPost Sponsored by Comcast Business
Your Business Is Under Attack: Here's How to Protect it From Anywhere

Regardless, as the 5G future takes shape, you can see the technology is much more than just enabling faster connections for smartphones. 5G quite literally has the potential to transform not only internet broadband service, but it will also enable new applications and use cases, from connected smart devices in the IoT, to autonomous vehicles, smart cities and connected factories; the list goes on. The word "disruptive," in the case of 5G, is an understatement.

Dave Altavilla serves as principal analyst for HotTech Vision And Analysis, covering breakout technologies from mobile to the desktop and in the data center. HotTech, like virtually all technology analyst firms, provides paid services, research and consulting to many semiconductor manufacturers and system OEMs. Some of the companies in this article may be clients of the firm.

Follow      

Copyright © 2019 IDG Communications, Inc.

YOU MAY ALSO LIKE

Recommended by



How to replace Edge as the default browser in Windows 10 — and why you shouldn't



It's time to squirrel away a clean copy of Win10 version 1909



How to set up a work-from-home 'office' for the long term

Cookies and other technologies are used on this site to offer users the best experience of relevant content, information and advertising. California consumers have the right to adjust what data we and our partners collect. [Privacy Policy](#).

I understand

Do Not Sell My Personal Info