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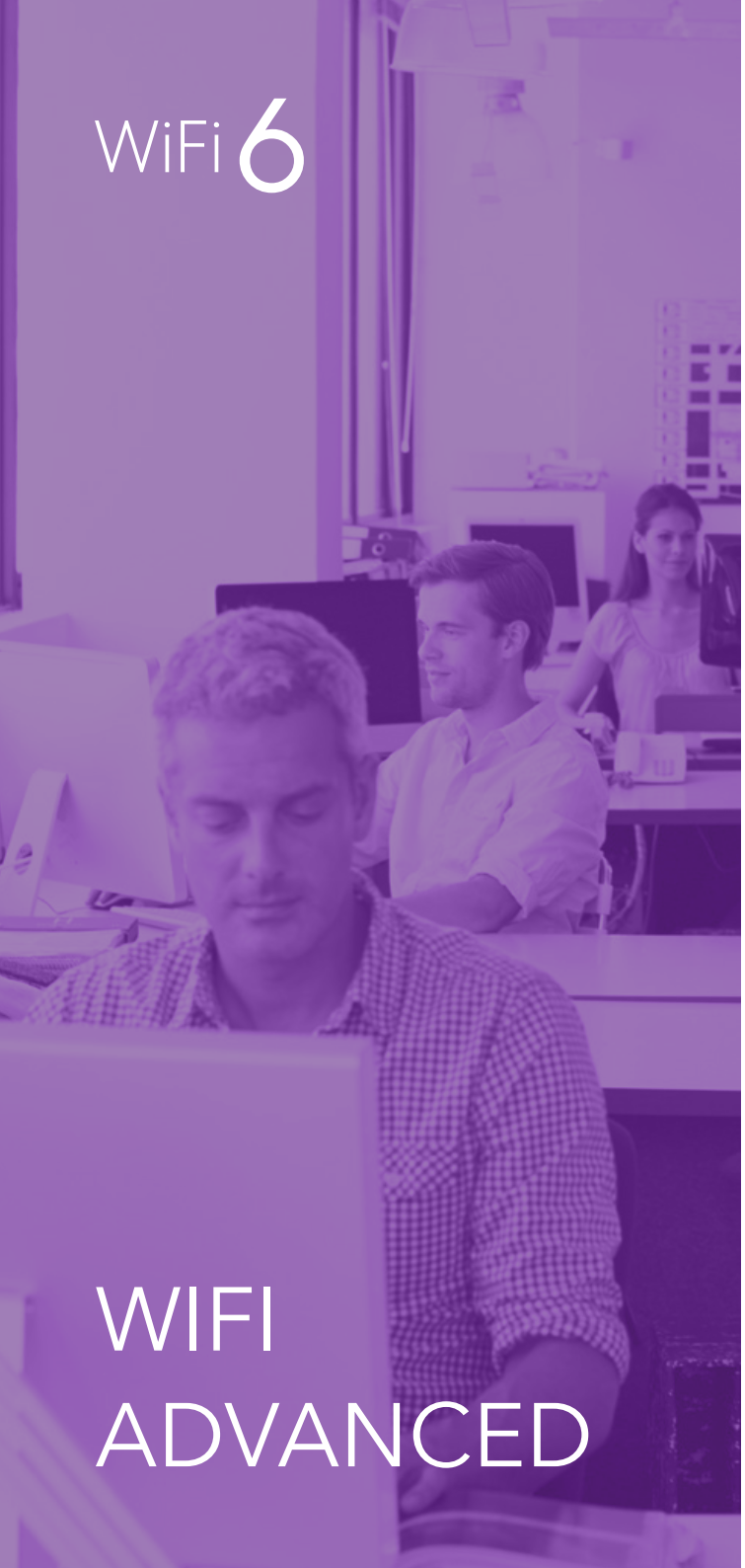
WiFi 6

helping businesses move
into the future of WiFi today



WiFi just became a whole lot better

More than just being faster than its WiFi predecessors, WiFi 6 deals with capacity and performance challenges head-on, overcoming previous limitations around density, coverage and the volume of devices that can be supported. It even helps save on battery life for many devices using WiFi.

It has been compared to leaving a congested narrow road and joining a 10-lane superhighway. WiFi 6 is one of those things that until you have it, you may not know how much it was needed.

Ready for the IoT

The Internet of Things (IoT) continues to spread throughout our personal and business lives, driving up the need to connect more devices. At the same time, demanding applications such as video streaming and conferencing mean that more bandwidth is needed.

WiFi 6 comes at the perfect time.

What is WiFi 6?

WiFi 6 is an industry-wide standard, brought to the market by the WiFi Alliance. Based on what is known in the network industry as the 802.11ax protocol, WiFi 6 is a step-change forward compared to the current 802.11ac protocol (renamed WiFi 5). While previous standards like WiFi 5 added speed gains, they did not deal with efficiency, whereas WiFi 6 does. WiFi 6 operates on both the 2.4GHz and 5GHz, with 6GHz set to follow soon.

WiFi 6 is already here

WiFi 6 products are already available, including routers from NETGEAR, which has the widest portfolio of WiFi6 home routers in the market. User devices that support WiFi6 continue to be introduced by all kinds of companies across 2020, so far including phones from Apple, Huawei, LG, Motorola and Samsung, plus laptops from Dell, HP, Lenovo and LG. This is just the start, with many more set to follow in the coming months, to help businesses make the most of the potential benefits that WiFi6 brings. By the way, though products that do not support WiFi 6 will not get the same full advantages, they will still work on WiFi 6 routers.

Ready for a more connected world

However, it's not just phones and laptops that are set to benefit from WiFi 6: just about anything that can communicate wirelessly could take advantage of the new protocol. For businesses, that can include: dense WiFi user hotspots, guest BYOD, printers, surveillance cameras, conferencing, supporting video and transmitting high-quality images across a network, VoIP, Point of Sale, LED lighting, door entry, equipment activated by motion-detection and voice-recognition, and a wide variety of smart building systems.

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Big benefits of WiFi 6 for businesses

Here is a closer look at the main benefits of WiFi 6, starting with speed.

Up to 70% faster…

The calculated performance improvement is 40% in the 5GHz band compared to WiFi 5 Access Points, plus up to 70% in the 2.4GHz band (measured internally in our WiFi labs). Real-life WiFi speeds depend on various factors and those theoretical improvements may not be achieved everywhere in practice, but even so, WiFi 6 will provide an instant speed advantage. As all kinds of devices become more sophisticated and bandwidth-hungry, that extra 30% to 70% will be valuable.

…and many more devices too

What really matters, however, is how WiFi 6 shares wireless bandwidth with multiple devices at the same time. WiFi6 works by increasing the potential speed for each device, so they all benefit. As WiFi6 Access Points (APs) can simultaneously broadcast to so many more devices or end-points compared to previous WiFi standards, when demand increases connectivity remains strong.

A WiFi current AP works by sending traffic to each device at a time and although most of the time that is not obvious nor makes a big difference, as the number of devices grow the ones at the end of the queue can suffer. Another way to express this is that WiFi 6 can treat all devices equally and faster.

Do more with less

As WiFi 6 Access Points (APs) each have 50 per cent more coverage, that means fewer of them should be needed, compared to what businesses have installed right now. So, WiFi 6 also represents a smart investment.

Better battery life and security

WiFi 6 can communicate with devices in a way that means they are only active when they need to be, rather than always being on alert for a wireless transmission. That will help save on battery life for sensor-based, IoT products and systems that are not being used all the time, such as door entry, printers, and smart building solutions, together with WiFi 6 smartphones. WiFi 6 also includes an improved security feature, so data is more protected against hackers.

WiFi 6 – supporting the connectivity tipping point

We live in times of unprecedented connectivity, both consciously and unconsciously. Many business users are surrounded by more wireless sensors than they probably know, and that volume is going to grow. The numbers speak for themselves:

35+ BILLION

IoT devices installed worldwide by 2021 and still growing exponentially to 75+ billion by 2025

50

IoT connections per UK household by 2023

13.6

IoT connections per US household by 2022

79 TRILLION

gigabytes of data generated by the IoT by 2025

1.9 BILLION

5G cellular subscriptions by 2024

5G will drive WiFi demand

5G will impact on WiFi, because the greater transmission speeds compared to 4G will mean it becomes possible to deliver more data to devices. So, when people walk into their places of work and expect their laptops, phones and business apps to perform as well on WiFi as they were on the 5G network, there will be a big additional load on wireless capacity. IoT systems that work across both WiFi and cellular will need parity. This is another example of how WiFi 6 Access Points will help businesses keep up with data demand.

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WiFi 6

Helping businesses be more productive - And serve their customers better too

Ideal for high-density locations, such as:
Airports, malls and theaters | Hotels and restaurants | Education and hospitals | Factories and busy offices | Large houses of worship | Construction sites | Busy offices

Examples of WiFi 6 in action

Making buildings smarter and save power – support door entry, conferencing, LED lighting, surveillance and multiple other wireless IoT systems, without worrying about capacity

In a busy healthcare clinic – send high-definition medical images, support virtual doctors and other demanding applications, yet still have plenty of WiFi for patients, waiting rooms and staff

In a school or college – Enough wireless for everything and everyone, including surveillance, door-entry and e-learning, plus secure high-bandwidth WiFi for both staff and students

On a construction site – for network-connected reversing cameras, wireless control of drones to survey a site, wearable devices that report on crew safety

Give every guest a strong connection – even in dense crowds, with lots of people using their phones and laptops at the same time

PoS for retail – keep up with in-store demands and keep customers happy

Support high-tech manufacturing – AI assembly line robots, automated delivery trucks and a whole variety of IoT systems

Public sector and non-profit – speed up modernization, with tablet-based sign-in, digital signage, high-tech voting booths and more

Financial companies – move towards zero-delay streaming of financial data and improve capacity

Law firms – support the trend towards video conferencing, digital research and cloud-based applications

Hospitality – create a great visitor experience, while making sure that poor wireless does not slow down productivity

Houses of worship – better connectivity to help the worship team do their jobs, keep the congregation connected, make the most of streaming and interactive video

How do I know if my business needs WiFi 6?

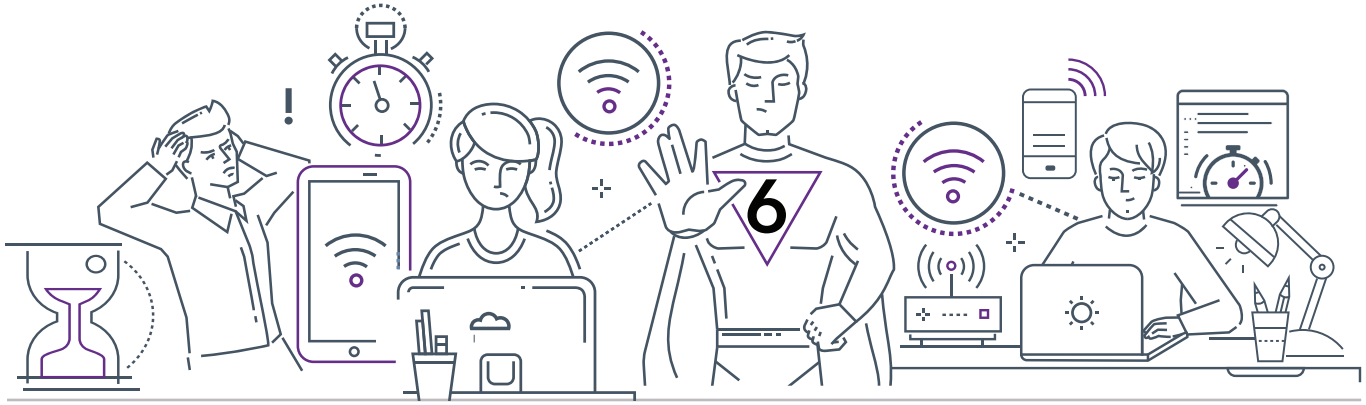
Many small and medium-sized businesses will be fine with WiFi 5 for a while, but other NETGEAR business customers have already made the change, because they have seen how WiFi 6 can instantly help them. If unsure, here are some questions to ask:

- Are my customers or employees struggling to get connected to WiFi?
- Are we about to expand on video streaming and conferencing?
- Are we planning to invest in more devices that depend on wireless?
- Is our data demand growing, but we can't install data cabling?

NETGEAR WiFi 6 for Business

NETGEAR is here to help businesses make the most of WiFi 6 and has already launched a range of WiFi 6 wireless routers, with more products being added all the time. NETGEAR is dedicated to giving small-to-medium businesses network products that combine high performance, affordability and ease-of-use. All those benefits are included in our WiFi 6 range, including Insight, our cloud-based network management portal, which makes it simple and fast to set up, maintain and add to a network, without needing any technical expertise.

To find out more about our WiFi 6 range, go to www.netgear.com/business/WiFi6



WiFi 6

How WiFi 6 works

For anyone who wants to understand how WiFi6 works, there are several key features or technologies that make the difference, and combined, they are known in the networking industry as High Efficiency Wireless (HEW).

BSS Coloring

Depending on the base station signal, WiFi 6 can choose what to transmit or defer, and this further improves overall performance. BSS Coloring pre-negotiates the channels that wireless Access Points will use, based on the location and signal strength of adjacent Access Points, to minimize interference, lower congestion, and maximize channel efficiency.

1024-QAM modulation and 160Mhz channel width

This approach is fundamental to improve WiFi throughout on a device-to-device level. It is based on increasing the number of points within a modulation constellation and therefore the number of bits that can be transmitted. Consequently, WiFi 6 achieves a 25 per cent increase in data throughput between devices.

MU-MIMO

Multi-user, Multiple Input, Multiple Output is a feature that already exists within modern APs, but it is enhanced within WiFi 6. It improves performance of devices with multi-stream radio configuration (which is the majority of modern devices). The result is that a router can communicate with multiple devices simultaneously, rather than broadcasting to one device, and then the next, and then the next, and both in upload and download mode.

OFDMA

Viewed as one of the most important innovations within WiFi 6, this stands for Orthogonal Frequency Division Multiple Access, and allows one wireless transmission to deliver data to multiple devices at once. OFDMA enables multiple data access within the same channel, using sub-channels to improve channel efficiency and multi-device transmission. Benefits include reduced interference between devices, greater flexibility over signal management, and improved WiFi coverage. OFDMA is a step-up from frequency-division multiplexing (FDM).

TWT

Target Wake Time is a feature that allows devices to plan communications with an Access Point, and so this reduces the time they need to keep their antennae powered to search for wireless signals and transmit information back. In turn, this saves on battery life.

WPA3

This is a security feature that makes it harder to crack passwords, and even if a hacker was successful, makes some data less useful. The WiFi Alliance has made WPA3 mandatory for certified WiFi 6 compatible products.

New frame formats

Modified frame formats support both new requirements and legacy equipment.

WiFi 6

Better WiFi for Business

WiFi 6 is one of the most significant developments in the world of wireless technology for many years, and it brings instant, tangible benefits to small-medium-sized businesses, especially as the volume of network traffic and connected devices continues to grow. WiFi 6 is now and here to stay. To explore more how WiFi 6 can benefit your business, go to:

www.netgear.com/business/WiFi6

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