

Life in the Fast Lane:

WHY SERVICE PROVIDERS NEED TO PREPARE FOR WI-FI 7

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- HOW LONG SHOULD I STICK WITH MY WI-FI 6 ROUTER?
- WITH THE INTRODUCTION OF WI-FI 7, IS 6E STILL A 'THING'?
- AM I FALLING BEHIND BY NOT OFFERING WI-FI 7?
- HOW DO I ADDRESS THE FEAR OF MISSING OUT?

ALL VALID QUESTIONS FROM AN ISP'S PERSPECTIVE, AND SOON THE CONSUMER MAY START THINKING SOMETHING SIMILAR. BUT HOW LONG BEFORE YOU, THE ISP, SHOULD MAKE THE JUMP?



YOUR CONNECTED HOME

How many devices do you have connected to your home Wi-Fi? Probably more than you think. The accumulation of smartphones, laptops, voice control assistants, door bells, smart-meters, kitchen appliances...it is estimated that the average UK household has around 30 devices connected to the home internet. That's a lot of competition for bandwidth.

These days more and more devices support 5GHz channels (so many of them used to be 2.4GHz only), but this has the knock-on effect of adding load to the 5GHz radios already serving your console, smart TV, iPads and work-at-home machines. All of these devices which really need the best connectivity experience, are now sharing the frequency space with an ever-increasing number of IoT or auxiliary devices.

Additionally, more users have wireless-meshing enabled at home, most likely using 5GHz channels too. We will inevitably reach a point in the connected-home, when the growing number of (30+) devices, mesh, and interference from the neighbours' Wi-Fi, regularly creates so

much wireless contention, that it becomes noticeable to the end-user. This leads to annoyance, generates support calls and negative feedback.

Wi-Fi performance challenges in the home are a commonly occurring issue (ask any support team), and these often prove some of the most frustrating and complex issues to resolve remotely. So, it is a good time to start thinking about a plan to future-proof the home network with next-gen Wi-Fi, that looks to address the issues of reliability, latency and spectrum management.

WHAT DOES WI-FI 7 ACTUALLY BRING?

There are already many articles out there explaining the tech behind Wi-Fi 7, so I won't attempt to re-invent the wheel here. Long story short - Wi-Fi 7 brings key enhancements to improve data throughput and reliability. The result is client devices in the home or office (where multiple devices contend for airspace), can now make more efficient use of the frequency space available to them. The desired outcome is to reduce latency and maximise throughput. Increased

capacity, lower latency and better spectrum management, will all improve the connectivity experience for users, and likely reduce the number of trouble-tickets logged with the ISP. Happy days.

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FROM THE INDUSTRY

Here is a little more detail:

Higher Speeds:

The theoretical 'top speed' for Wi-Fi 7 is 46.4Gbps; a fourfold increase on what was previously possible. Real-world results are around 5.8Gbps for a Wi-Fi 7-capable client, - still 2.4x faster than Wi-Fi 6/6E. Impressive!

Better frequency management in the home/office:

Wi-Fi 7 introduces 'Multi-Link Operation' (MLO). Wi-Fi 7 devices can now utilise 2.4GHz, 5GHz and 6GHz to quickly switch frequency, and transmit on a band/channel with less interference, at a moments' notice. The benefit here will be lower latency, lower packet-loss, and increased reliability. Note that not all devices will support 6GHz.

For context, here are some examples of MLO in action:

For gamers, it will be about lowering latency and reducing packet-loss. The Wi-Fi 7 client (a VR headset) experiences interference, makes a quick assessment and switches to a cleaner frequency space and disaster (lag) is averted! The gamer survives his encounter with the online adversary and doesn't have to scream in frustration at his TV for thinking he fired first, eventually realising he didn't.

For the future-connectivity of mission-critical systems such as 4K/8K CCTV, a stable connection is of course paramount, and it needn't be a hard-wired connection in the future. Equipping a 4K/8K camera with Wi-Fi 7 could mean mitigating interference at a moments' notice; by dynamically switching bands using MLO, the camera avoids interference and contention (which can lead to packet loss or a disconnect). This quick channel switching could mean the difference between capturing vital footage vs. Wi-Fi drop-outs causing loss of images. So when your neighbour helps themselves to your prized veg, you'll catch them in the act with high-res imagery! Until 8K CCTV becomes widespread though, stick a lock on your greenhouse door.

STILL IN THE STARTING BLOCKS

As with the life-cycle of every Wi-Fi standard developed so far, the successful application of Wi-Fi 7's benefits is dependent on widespread adoption of the technology in broadband and consumer devices. A key factor in adoption, will be the point at which Wi-Fi 7 becomes more affordable. Currently it sits at the 'bleeding-edge' of technology and the price-point is naturally higher. The industry is still in the early stages with Wi-Fi 7.

The Wi-Fi Alliance only began certifying Wi-Fi 7 devices in January 2024 and

the handful of pre-certified routers currently available today are naturally, very expensive. And enjoying the benefits of a Wi-Fi 7 router also means upgrading the clients connecting to it. Few users are likely to replace a perfectly serviceable laptop just to take advantage of a new Wi-Fi standard. High-end smartphones, PCs, and tablets are expected to lead the way with Wi-Fi 7, an example being the Samsung S24 Ultra.

The Wi-Fi Alliance is anticipating that 233 million Wi-Fi 7-enabled devices will enter the market this year, rising to 2.1 billion by 2028 with mass-market adoption. But let's assume that much of the market will continue with Wi-Fi 6 devices for quite some time yet - adoption of Wi-Fi 7 in mid-range devices will be gradual. ISPs who choose to utilise this gradual uptake as an opportunity to calmly assess the options for Wi-Fi 7 CPE (and not jump feet-first into adopting the 'best-available' Wi-Fi 7 capable router right-now), will find they have more choice of hardware and supported platforms by early 2025.

DO SUBSCRIBERS NEED WI-FI 7 NOW?

Is there a demand right now and will there be in the next 12 months, for widespread adoption of Wi-Fi 7 routers in every home? Understanding subscribers' current needs and pain-points is helpful in answering this question.



The case for Wi-Fi 7 adoption now: “Sure, Wi-Fi 7 has some valid use-cases and should be offered right-now!”

People will always want the latest gadgets and connectivity, and if you offer it to them, your brand can be seen as a technology leader. Being the first-to-market with the latest Wi-Fi 7 technology is also an exciting prospect.

In the enterprise sector, the higher bandwidth, throughput, and lower latency offered by Wi-Fi 7 could also add value. This could mean providing better coverage and capacity at a public venue such as a sports stadium, or improved connectivity within an industrial IoT setting. There are definitely current use-cases where choosing Wi-Fi 7 now will benefit and future-proof the performance of high-density, manufacturing, and educational environments. But this really concerns enterprise-grade Wi-Fi, rather than residential and small businesses who lean more toward lower numbers of users, and smaller budgets.

The case for biding your time: “Implementing Wi-Fi 7 right now is not essential”:

For the average residential subscriber (even those with 30+ connected devices), existing Wi-Fi 6 technology is likely to be sufficient to meet their requirements for a time yet.

Some high-bandwidth users do exist of course - gamers, online FOREX traders, streamers and videographers, large households, or those experimenting with the very latest consumer tech such as 8K and AR/VR are some examples. Can these customers be served with an existing Wi-Fi 6 router with multi-gig WAN capability, or offering lower-latency peering for gamers perhaps? Those ‘in-the-know’ subscribers will understand the benefit and value of such offerings. Later-on you can combine this with a stepped-upgrade to a Wi-Fi 7 router and boom – you are differentiating yourself from the competition with a monster-offering that doesn’t boil down to just being a simplistic Wi-Fi radio upgrade.

And let’s not forget that a well-designed and executed Wi-Fi 6 network could give them what they currently need. You could support those intensive Wi-Fi users, with a cursory look at their households’ existing bandwidth usage, and offer a

call to run some Wi-Fi health-checks and see if anything can be done to improve their experience. E.g. offering mesh units to improve coverage, or a simple channel-change to avoid interference from encroaching neighbouring networks, could be the difference between retaining a customers’ loyalty or losing them to a competitor offering a shiny new router.

For service providers who choose to wait and give the Wi-Fi 7 market time to mature, they will see that product vendors will spend the next year or so refining their Wi-Fi 7 portfolio (and firmware stability). This will have the knock-on effect of improving overall product reliability and quality, as well as allowing time for further Wi-Fi capabilities to be introduced. Ultimately, choosing not to jump-in early is likely to stand the ISP in good-stead. Helping to minimise the risk of deploying ‘bleeding-edge’ tech that an ‘early-adopter’ would generally carry and pass-on to their end-users.

INTEGRATING WI-FI INTO A WINNING PACKAGE

Simply offering the latest-and-greatest Wi-Fi technology without considering other factors is unlikely to lead to longer-term subscriber retention or profitability.

Service providers should really keep in mind that Wi-Fi performance is just one of many factors that subscribers look-for in a broadband service. Speed, reliability, ease of use, and excellent customer support are equally important. Adopting Wi-Fi 7 should form part of a broader strategy designed to take advantage of the latest technology evolutions to support exciting new services.

Of course, Calix has Wi-Fi 7 systems in the roadmap for 2024. The new standard will be fully integrated with SmartLife managed services and supported by the Calix end-to-end broadband platform. We’re not rushing it out, though.

A fully managed Wi-Fi 7 package will enable service providers to differentiate in the market and target those high-bandwidth users with premium service offerings. For the UK’s Alt Nets this could mean providing tailored services to specific market segments, such as small businesses, gamers, or home-office workers. Those subscribers not in immediate need of enhanced Wi-Fi may be better-off waiting for prices to

fall and mass-market adoption to arrive. Developing the insights to accurately understand subscriber trends and expectations is key to getting this balance right.

As we progress through 2024, the increasing number of connected devices and the need for ever-higher bandwidth will drive demand for high-performance Wi-Fi, which will spur adoption of Wi-Fi 7. But suffice to say, pervasive adoption of the very latest Wi-Fi standard is a marathon, not a sprint, so use the opportunity to take a measured approach. Why panic and jump now, just for fear of missing out?

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