

# The Modern Home

## A Case Study on achieving the best from your home internet and home Wi-Fi connection

### Why is my home Wi-Fi connection slow?

We've all been there, asking ourselves the same question... Why is my internet connection so slow? Ofcom studies tell us that between May 2018 and May 2019 average internet download speeds in the domestic setting increased by 17.32%. In the last 12 month period to May 2020 this has increased again by 18.08%. This tells us that Internet Service Providers are delivering the increase in speeds we need and expect as consumers. As Fibre To The Property (FTTP) becomes more available, these figures are set to increase further over the coming months and years. So why are so many home internet users having problems? The answer in almost all cases, is something called **'Throughput'**. This is different from and should not be confused with **'Bandwidth'**.

The aim of this study is not one of technical endeavour but will use plain English to explain the in home Wi-Fi connectivity challenges and what we can do to solve them. We'll use a real-world example to help demonstrate this over the page.

### Did you know?

There are more than 9 billion Wi-Fi capable devices in the world.

Wi-Fi and mobile connected devices will generate 78% of all internet traffic by the end of 2020.

Wireless Internet was invented in 1990, we've come a long way in 30 years.

#### » What is Internet 'Bandwidth'?

Bandwidth is essentially how much internet speed that your ISP can deliver from their network to your home connection. This connection is then managed by the router in your home.

#### » What is 'Throughput'?

Throughput is how much data (or information) that successfully reaches your device from your router and back again. The better the throughput, the better use of the available bandwidth you will have

### Some Internet Acronyms Explained:

**ADSL:** An internet connection that uses a copper telephone line from your property to your telephone exchange. This is now an older technology for home internet.

**FTTC (Fibre To The Cabinet):** Your connection travels by a traditional copper line back to the nearest roadside cabinet. From the cabinet back to the exchange, the connection runs over Fibre Optic Cable. This is much faster than ADSL.

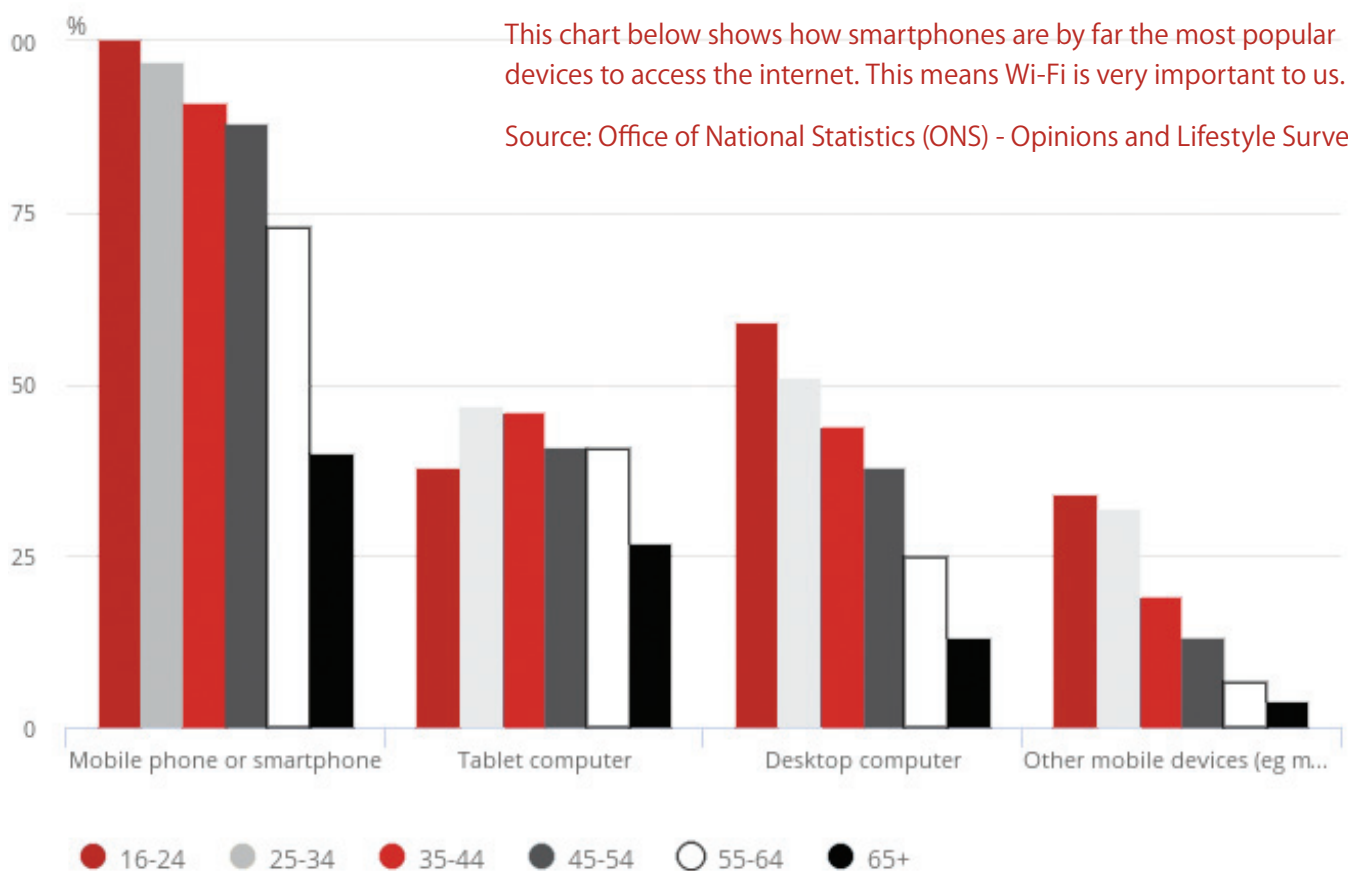
**FTTP (Fibre To The Premises):** This offers much faster speeds and can treat both your download and upload speeds with the same importance. As the name suggests, this is where a Fibre Connection goes from your ISP direct to your property, using Fibre Optic for the full distance.

## The situation

A family living in Henley-on-Thames had recently upgraded their internet connection to the next best thing. FTTC (Fibre To The Cabinet). Naturally the family's expectation was that all of their connectivity woes would be solved with this uplift in service. The day of the switchover came and went yet they still had problems. Upon calling their Internet Service provider, an ethernet cable was run directly from a laptop to the new router and a speed

test was run. The results indicated that the speed was as expected and the bandwidth coming into the property was exactly what they were paying for. The family had tried a number of after market products to manage their problems to little or no avail. In some instances the Wi-Fi connection on a mobile device in the house would show 2-3 bars yet videos would be poor quality with the dreaded spinning

wheel popping up every few seconds. Even websites would take far too long to load to be productive. The problem was 'Throughput'. This is not a term most consumers hear or understand, and you should not need to. You just want your internet to work. In addition most of us use our mobile devices for the majority of our online use so having good Wi-Fi is paramount.



## The details

The routers we all use are great at managing the internet connection coming into the home and in many cases depending on your property, handle Wi-Fi absolutely fine. There are however circumstances where no router (however expensive) would be expected to solve the problem caused by structures within the home. Modern Wi-Fi technology means great speeds (if you're close to the router). Move around a corner or under a steel support in your home, while the connection can still look okay, walls, steels and even firedoors inhibit the ability for your device to send or receive all of the information that it needs to exchange with your router. This missing information then gets re-sent, over and over until it reaches your device. This is what creates the slow website loading and the spinning wheel when you try to watch a video. Ultimately this has a huge impact on your wireless connection speed. The routers that ISP's develop for your home are getting better every passing year, however making your home Wi-Fi ready means many of us need to supplement the the router with additional technology. In terms of productivity gained, the new technology pays for itself very swiftly.

## The solution

To resolve these 'throughput' challenges we don't force the WiFi signal through these steel supports or walls. Instead, we go around them, literally.

The best way of solving this is to use Wi-Fi Access points (AP's). You've probably seen these in hotels, supermarkets and coffee shops. They are small devices that can be fixed to walls or ceilings and depending on your home and how it's constructed, you may need two or more of these. Each access point is placed on different sides of any offending steel supports, walls or even silver backed insulation that's in your walls. In this instance a network cable goes from these Access Points straight back to your router. Once configured the AP's talk to each other through these cables and around the obstructions in your property. As a result, when your signal is beginning to weaken, the system steps in to switch you from one AP to next depending on which has the better connection speed. What is great is that this happens in real time so you experience no drop in your internet connection or speed while this occurs. As an analogy, it helps to think of the mobile phone network. If you are driving down a motorway and a passenger is using their phone, it won't stay connected to one cell tower but instead, as you move, the tower will switch you to the tower with the best signal. This is essentially what is happening in a property with a good Access Point solution in place.

## The future

The technology that brings the internet to your home is constantly evolving. FTTP (Fibre To The Premises) is being rolled out across the country and in the coming months and years, this will become the new normal. We rely on our home internet connections to operate in the modern world and to an extent, operate in a modern society. Whether you are upgrading to FTTC or the new FTTP, we will all need to take steps in our homes to ensure they are Wi-Fi ready and to make the best of the internet that comes into our homes. Essentially, we need to keep up with the vast developments in bandwidth technologies just like when we upgrade our phones to access new features available. The manufacturers of your mobile devices and our Internet Service Providers can only do so much to help us. It's worth noting that there are other measures that can be taken to aid your current setup, such as channel selection and have your router configured for 2.4Ghz vs 5Ghz or both but this may be too technical for some reading this and a topic for a different case study. In order to guarantee the Wi-Fi you need in your home, many of us will need to invest in a solution that is robust and meets not only the needs of today but for our future needs too.