A Different Kind of Broadband • Full-fibre • Ultrafast • Future-proof
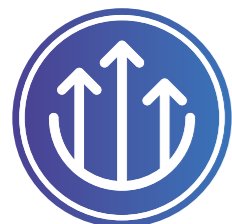
A Technical Guide to the WightFibre Network Technology vs the Competition

WightFibre's Network Technology vs the Competition

This White Paper explores the alternatives to the approaches taken in the WightFibre Point to Point Network with Resilient Ring Topology and shows comprehensively why the WightFibre network is better.

A Little Bit of History

Widespread Internet connectivity in the UK started in the mid-1990s with the introduction of a number of dial up services, notably from BT, with BT Internet aimed at domestic customers and BT Click at businesses. There were also many other companies starting to get involved including America Online entering the market as AOL and others such as Europe Online, Virgin Net dipping their toe in the water. Some of these fell by the wayside (Europe Online), whilst others grew, diversified, merged and flourished (Virgin Net became Virgin Media). Many of these early ventures partnered with BT's competition such as Mercury Communications and Energis or the cable companies like Telewest and NTL.

ADSL and VDSL

In the mid-1990s BT experimented with the ADSL technology that we have become used to since the dotcom boom of the early 2000s.

ADSL stands for Asymmetric Digital Subscriber Line. What this does is rely on the fact that the original copper wires used to carry voice calls can, using modern technology, have a digital connection superimposed on top, far surpassing the theoretical data requirements for a voice call (about 8Kbits), and the best modems of the time (about 56Kbits) and instead achieving download speeds of 1 to 1.5 Mbps.

The 'asymmetric' part of the description is because the upload speed was much less than the download speed, typically 0.2 to 0.5 Mbps.

In practice, the achievable speed was very much dependent on how far from the exchange you were, as well as the physical condition of the copper and how long much of the cable had been in the ground. Even environmental and weather factors can sometimes make a difference.

BT rolled out the technology across the UK, following a very successful trial in Colchester, and as part of the continuing programme of reducing their monopoly (after the privatisation way back in 1984), they were required to provide access to this network to other providers. In fact, almost all ADSL and derivative networks were installed and maintained by a division of BT called Openreach (now a separate company), and most Internet Service Providers actually resell the Openreach network. Only very few operators have their own network, WightFibre being one, and Virgin Media (on the mainland) being perhaps the best known (though they don't have their own network on the Isle of Wight).

Over time, technology improved and VDSL or Very High Speed Digital Subscriber Line became possible with theoretical speeds of typically 34-70Mbps download and 8-16 Mbps upstream, leading to the higher speed services we have become familiar with in recent years, but again with actual performance still very much limited to the distance from the exchange and condition of the cable. This is where the infamous 'up to' claims we are all familiar come from.

So Called 'Superfast Fibre Broadband'

The next step taken by Openreach was that equipment housed in the exchange was migrated to their green cabinets which were connected to the exchanges by fibre optic cable. The marketeers of course called this 'Superfast Fibre Broadband', when in fact the last leg of the journey is still copper and still liable to being affected by distance from the cabinet and the quality of the cable. In the jargon this is known as fibre to the cabinet, or FTTC.
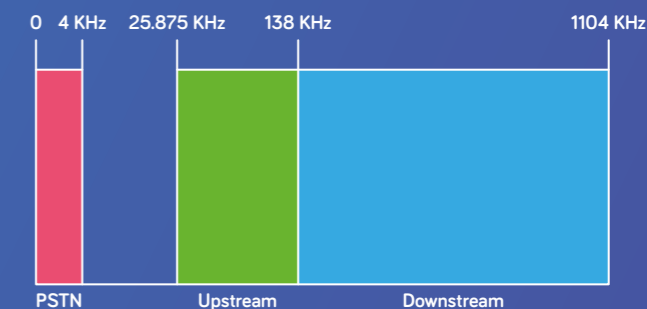
Fibre to the Premises

The next step in evolution is to do away with the copper wiring altogether. This is known as fibre to the home or premises (known as FTTH or more often FTTP).

Openreach has a version of this based on GPON technology. GPON stands for Gigabit Passive Optical Network. GPON is a point (the cabinet) to multipoint (multiple homes) technology and makes use of a passive optical splitter to split a single fibre from the exchange into multiple fibres going to individual customer premises – on average each fibre is shared with 64 homes.

GPON is still uncommon in relation to the older copper-based technologies and is mainly being rolled out in dense urban environments or deployed in new developments. Very occasionally it is also being used to serve individual properties in rural environments.

WightFibre's Point to Point Network

Most important there is one fibre from the cabinet (point) to each home (the other point, hence point to point) – no sharing of connections with other homes or business.

Why is the WightFibre Network Better?

It is fairly clear why the Wightfibre network is better than ADSL and VDSL technology, simply based on speed and performance, but how does it compare to GPON?

The GPON Internet connection may at first sight seem to be similar to the WightFibre network, however it is actually very different. GPON makes use of multiplexing and passive fibre splitters to share a single fibre connection with multiple premises – it is a point to multi-point architecture, not a point to point architecture. In fact, many GPON systems service 64 customers from a single fibre; WightFibre customers could have three fibres each although only one is currently used! Secondly it is likely in most instances that the connectivity is not resilient to a cable break with single point of failure runs often all the way back to the exchange rather than just the local cabinet. Bandwidth provided is normally asymmetric not symmetrical - upload speeds are typically only 20% of download speeds so, for example, a 100Mb GPON broadband connection would provide 100Mb download but only 20Mb uploads whereas on WightFibre's network upload and download speeds are the same (100Mb download and 100Mb uploads. So many of the benefits inherent in the WightFibre network (ultrafast, ultra-reliable, futureproof) simply don't exist with GPON.

In short, there is no true direct competition on the Isle of Wight to a WightFibre Internet connection; no-one else can offer Internet connectivity via a Point to Point network solution supported by a resilient ring network architecture that offers the same ultrafast upload speeds as download.

wightfibre

because we care

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