

# Rural Area Internet Technology

2016-03-19

BT/Openreach seem wedded to hybrid-fibre FTTC (fibre to the cabinet) technology. Although this has proven cheap and relatively easy to install in urban areas, its use in rural situations is less clear. It has severe limitations and certainly will not keep up with growing Internet speed/reliability requirements for the next 10 years. The Internet infrastructure of the UK's rural areas is now finally being upgraded. A genuine fibre (pure-fibre) to the premises (FTTP) solution provides a significantly better and future proof solution. We need to make sure the rural areas are not fobbed off with an obsolete and limited Internet infrastructure that will cost the tax payer more in the long run.

## Why FTTP ?

Pure-fibre FTTP is a genuine NGA architecture. It is future proof unlike FTTC which is already becoming quickly outdated in terms of the growing Internet speed and reliability requirements.

- Reliable system. Water ingress in the rural areas is particularly an issue with copper cables. Our and others Internet availability/speed is very variable. The number of times we have had to try and get things fixed and the time and cost of this is high.
- Solid and fast downlink speeds. Bit rate is in-dependent of distance for the speeds/distances concerned. Speeds can go up to multi-terabyte speeds if needed, so quite future proof as Internet services evolve. Rural properties tend to be widely spaced. FTTC is only really suitable for < 600 metres @ 50 Mbits/sec on good quality cables.
- Solid and fast uplink speeds. Cross talk due capacitive/inductive coupling on copper wires restrict downlink/uplink speed ratios. That is, everyone sharing a multi pair copper cable has to have the same uplink speed. A business, for example, could not have a faster uplink speed. Faster uplink speeds are needed for creative businesses/people, home working and video conferencing.
- Customers get the speed they have ordered/paid for be that 10Mbits/s, 25Mbits/s, 100 Mbits/s, 1Gbits/s etc. Rural businesses or individual home owners can pay for and receive a higher speed Internet services if desired.
- Lower latency (faster ping times) for interactive use.
- Contention (sharing the overall bit rate) can be lower with an FTTP solution. However it can be higher depending on the systems design (number of shared fibres with splitters used).
- Almost no interference issues which cause lost packets and unreliable connections. Especially an issue with long rural overhead cables. At our separate business unit 10 companies internet was knocked out (Intermittent 0.5MB/s ADSL rather than 5Mbits/s) for 6 months due to a faulty laptop power supply in one of the offices.

- Lightning strikes cannot cause business/home internal systems damage. Already had 3 computers, two switches and a router destroyed by a BT telephone line strike. With the IoT becoming prevalent more devices are locally connected to the Internet.
- Future proof. A pure fibre network can reach bi-directional multi Gigabit speeds easily irrespective of the distance a property is from the exchange and is much more reliable. FTTC has already reached its limits and any such systems will need upgrading to G.Fast (urban areas only) or proper FTTP within the next 7-10 years.
- Long term lower maintenance and running costs for the network, being proved by world wide telecommunications companies.
- More "Green", much less power is needed to run the Network. There is no green cabinet with its powered electronics required.

## **FTTP disadvantages to FTTC**

- Initial install cost and install time. This is primarily where underground cable works are required. In rural locations, where overhead cables are used, it is likely that FTTP install costs would be similar and cheaper if costs over 10 -20 years are taken into account.
- More infrastructure works for the customer and may require a router that provides telephone services over the fibre optic cable if the existing telephone wires are removed.

## **FTTP Install Costs**

The costs of installing fibre to peoples homes is often touted as being very high. This is mainly due to the fact that most properties are in urban areas and most of those are connected by underground cables. The cost of digging up roads and pavements to install the fibre optic cables is very high.

In rural areas the situation is quite different. Most properties tend to be connected using overhead cables. The costs of installing overhead fibre cables is much lower than an underground installation. The costs of the fibre itself is cheaper than the copper.

Another aspect is that most of the overhead cables are old and are probably at least half way through their lifetime. They will likely need replacing anyway within the next 10 years or so. Thus a fair degree of the installation costs of the fibre can be recouped over a 10 year period. If you take this into account, over a 10 - 20 year period, FTTP is likely to be significantly cheaper than a FTTC installation as no network updates will be needed and there is no cabinet with its associated powered electronics needed.

Also FTTP is future proof as it is able to deliver bi-directional multi Gigabit speeds easily and reliably. This means the Infrastructure has a long life time (20 – 30 years ?). FTTC systems however are really outdated already and certainly will need to be upgraded within the next 7-10 years significantly increasing the cost of a FTTC solution over the much superior FTTP solution.

## Notes

- There are technologies such as G.Fast becoming available. This allows the fibre to be taken closer to the property but keeps the existing copper cable for the last portion of the network. This will likely be used to raise urban FTTC speeds to > 100 Mbits with 5 years or so. It is not readily applicable to rural installations though.
- FTTrN technology can be used for some individual properties where the costs of FTTP installation is very high. This allows use of the existing copper cabling to the property to the nearest, easily accessible fibre of an FTTP system. Could be useful where a property is connected by an existing relatively long underground cable.
- Ofcom are pushing for FTTP to be installed across the country. There are now quite a few companies coming on stream to provide a FTTP solution to rural areas. These companies are, however, restricted by the BT/Openreach monopolies ownership of the ducting and overhead cable space and planning and “fibre tax” issues.

There are quotes like:

**A Vodafone Spokesperson said:**

“We welcome Ofcom’s move to tighten its regulation and governance of BT Openreach and leave structural separation on the table. We also welcome the move to open up BT’s ducts and poles, which we have successfully used in other countries such as Portugal to provide customers with fibre to premises.

However, BT still remains a monopoly provider with a regulated business running at a 28% profit margin. Therefore, we urge Ofcom to ensure BT reinvests the £4 billion in excess profits Openreach has generated over the last decade in bringing fibre to millions of premises across the country, and not just make half-promises to spend an unsubstantiated amount on more old copper cable: we agree with Ofcom that fibre is the future.

We look forward to engaging with Ofcom as they implement these important regulatory changes.”

and

The CEO of [BT Group](#), Gavin Patterson, has confirmed to the ‘[Media & Telecoms 2016 & Beyond](#)’ conference in London that he will “*significantly ... accelerate the deployment*” of their ultrafast 330Mbps capable Fibre-to-the-Premises ([FTTP](#)) broadband technology.