Fixed Line Internet Connectivity
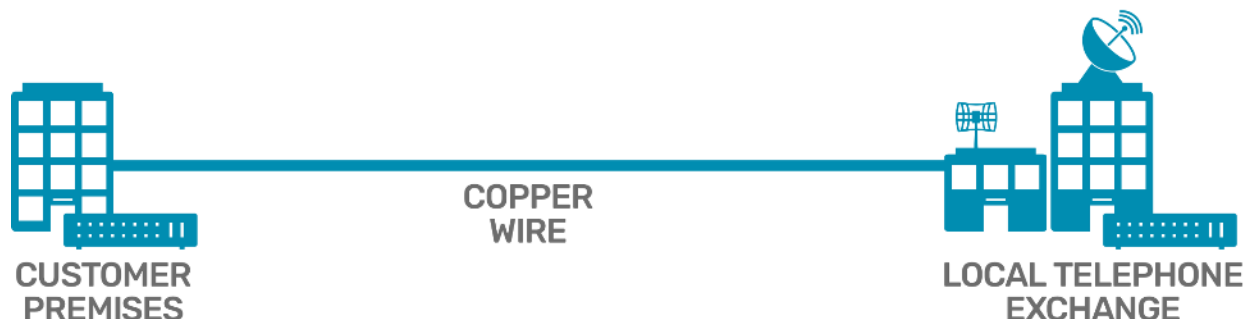## OPTIONS FOR BUSINESS

Introduction

When considering which fixed line internet connection to go for, there are many types of service which are on offer. The three main types of fixed line internet connection are explained in detail below.

1. Broadband Connection

Broadband Connection

COPPER WIRE

CUSTOMER PREMISES

LOCAL TELEPHONE EXCHANGE

A broadband connection is probably the most common form of internet access as it was the first technology to deliver unmetered internet access to the consumer and small business at affordable rates.

The connection is delivered over a pair of copper wires that enter the home or small business. The copper line goes back to the telephone exchange in the local area. Typically, this will be on the same piece of wire as the existing phone line otherwise known as a PSTN (Public Switched Telephone Network) line.

Broadband is a generic term for internet access and the specific term for the technology is ADSL (Asymmetrical Digital Subscriber Line) – note the word "asymmetrical" as the speeds differ in the upstream and downstream directions.

Early ADSL lines worked to a maximum of 8Mb/s in the downstream direction (to the consumer or small business) and 1Mb/s in the upstream direction (to the internet). The latest version (or ADSL2) works to a maximum of 24Mb/s in the downstream direction and 2Mb/s in the upstream direction.

As broadband is delivered over a copper line, the speeds offered are affected by the length of the copper wire. Basic rule of thumb – the longer the piece of copper wire, the lower the speeds will be. The service is also contended, meaning that bandwidth is shared with the immediate area. Broadband assumes that not all people will be on the internet at the same time, so it shares out bandwidth as demand dictates.

Broadband was great in the early days of the internet when it was used for mainly web surfing and email. User behaviours have changed dramatically since the advent of broadband with bandwidth increasing exponentially due to the use of streaming services such as Netflix. Broadband was not designed to support such services, particularly when several users or households may all be streaming video at once!

Pros & Cons of a Broadband Connection

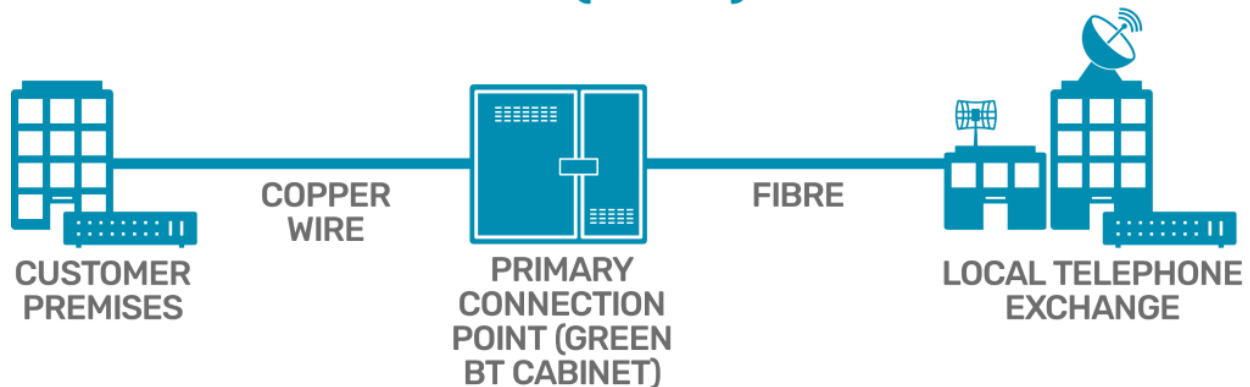| Pros	Cons
It's an affordable internet access service. Typical lead time of 10 working days.	It is asymmetrical in nature so different speeds downstream and upstream. Speeds can be affected by: • Length of the copper wire between the premises and the local exchange • Quality of the copper wire. In some parts of London, there is still copper wire that was laid during the Victorian age! • In the 80's to cut costs, telephone companies used aluminium instead of copper to make the phone lines. Aluminium is not as good a conductor as copper. The service is contended so you are sharing bandwidth with premises in the immediate area. Has your broadband ever slowed down just after the kids come back from school? There is no SLA or Service Level Agreement. If you have a fault, then the broadband provider will work on a best endeavours basis with higher priority cases being dealt with first.

2. FTTC Connection (Fibre to the Cabinet)

Fibre to the Cabinet (FTTC) & SoGEA

CUSTOMER PREMISES — COPPER WIRE — PRIMARY CONNECTION POINT (GREEN BT CABINET) — FIBRE — LOCAL TELEPHONE EXCHANGE

FTTC was developed to address the main issues with broadband:

- The speeds decreased in proportion to the length of the copper wire.
- It could not scale well to provide higher bandwidth speeds to allow for the exponential increase in bandwidth.

The only way to obtain guaranteed internet speeds into any premises is to provision a piece of fibre; but this comes at a huge price. So, they decided to do it halfway.

N.B. There are providers who have done fibre into the premises such as Virgin Media. This is a huge initial investment but cost effective over a long period of time.

FTTC is exactly what it says on the tin – the provider provisions a piece of fibre from the exchange into the green cabinets around the area as per the diagram. There is still a piece of copper wire going from the cabinet into the end user premises but this distance is reduced significantly and as such allows for greater internet access speeds. Typical access speeds are up to 80Mbs downstream and 20Mb/s upstream.

Pros & Cons of FTTP Connections

Pros	Cons
- It's still an affordable internet access service – although slightly more expensive than a broadband connection. - It addresses the thirst for bandwidth so allows for services like Netflix to consumers. - It also allows businesses to adopt cloud technologies better such as hosted voice and hosted desktop. - Typical lead time of 10 working days.	- It is still asymmetrical in nature so different speeds downstream and upstream. - Speeds can still be affected by the length and quality of the copper wire, but as the distances now are much smaller, this negative impact is vastly reduced. - The service is still contended but as your speeds have been increased to up to 80Mb/s this does not have as much of a negative impact. - There is still no SLA or Service Level Agreement. If you have a fault, then the broadband provider will work on a best endeavours basis with higher priority cases being dealt with first.

3. Fibre of Leased Line Connection

Fibre to the Premises (FTTP) & Leased Lines

FIBRE

CUSTOMER
PREMISES

LOCAL TELEPHONE
EXCHANGE

Fibre is the "Rolls Royce" internet access solution and requires the provider to deliver a piece of dedicated fibre into the business premises from the local exchange. Once a piece of fibre has been provisioned into the business premises then the potential for internet bandwidth is limitless.

As the service is delivered over fibre it is a symmetrical service and is uncontended. Fibre is not affected by long distances and as such the speeds are not negatively impacted by the distance from the business premises to the exchange.

Leased line delivery can be challenging as a piece of fibre has to be physically laid from the exchange to the premises. This could require digging up the road which in turn requires permission from councils to shut roads etc. As such, leased line deliveries can be long winded and potentially expensive. If a road does need digging up, then there will be a cost associated with this and the provider will ask the customer to pay ECCs (Excess Construction Charges).

Pros & Cons of Leased Line Connections

Pros	Cons
- It is symmetrical, providing speeds up to 10Gb/s and beyond. - The speeds are not affected by the distance from the exchange to the premises. - It is an uncontended service. - It comes with an SLA (or Service Level Agreement) typically a fix will be delivered within 4 hours. - As it provides greater speeds easily, it allows for businesses to adopt cloud-based services which also have a positive impact on their business. For example hosted voice or hosted desktop.	- It can be expensive – although leased line pricing is reducing significantly over time, a typical leased line will cost a business from £3,000 to £10,000 per annum, depending on fibre availability within the local area. - The average lead time of a leased line is 65 working days. - If there are ECCs then the customer will need to pay them.

N.B. All leased line pricing is bespoke and needs to be requested via the Kelia.co.uk website or from your Kelia Account Manager.

There is a cheaper version of this product called FTTP (Fibre To The Premises) which is designed for SME businesses whose budget does not match that of a leased line. It is provisioned in the same way as a fibre connection but is contended and asymmetrical to allow for more competitive pricing.

Any Questions?

With over 30 years of experience working with top-tier telecoms suppliers and clients, we've probably got the answers you need.

Most connectivity solutions come with a lengthy contract of 12-60 months, so making the right decision for your specific business and use-case is crucial.

If you need help with fixed line connectivity for your business please call our team on 03303 205080 (option 1), they'll be happy to answer any questions and help you make the right choice.

Glossary of Terms

At Kelia, we're not big on techno-babble. We'd much rather use simple language that everybody understands. That said, we recognise that we work in a technology space, so you'll find some definitions of some industry-specific terms below.

ECC: Excess Construction Charges (ECCs) are additional fees charged by service providers to cover the extra costs of extending network infrastructure to a location, often due to factors like distance, terrain, or special construction needs.

Contended/Uncontended: Contended services are network connections where multiple users share the same bandwidth, leading to potential fluctuations in performance during peak times. Uncontended services, in contrast, offer dedicated bandwidth to a single user, ensuring consistent, stable performance without fluctuation due to other users' activities.

PSTN: The Public Switched Telephone Network (PSTN) is the traditional, circuit-switched telephone network, used globally for voice communication. It primarily operates on copper wire systems and supports landline telephones.

SLA: A Service Level Agreement is a formal document that defines the level of service expected from a service provider by a customer.