



BUSINESS

Unlocking the Opportunities of Dark Fibre

WHITEPAPER

A publication from
Virgin Media Business
Wholesale

Dedicated to your growth

PROUD TO BE YOUR PARTNER



Contents



Introduction

Dark fibre is at once a simple product and a complex proposition.

Let's start with the simple bit first.



At a basic level, dark fibre is one or multiple unlit and unmanaged fibre-optic cables. The owner of a stretch of dark fibre chooses which equipment they want to use to light it up. They keep full control of the network end-to-end - from service protocols to bandwidth.

The exciting part is what opportunities dark fibre can unlock now and in the future. The demand for, and supply of, dark fibre has increased exponentially over the last few years. Network operators are rightly considering all options as they expand their footprints and connect the UK. At the same time, many also want to take greater control of their network with the option to increase bandwidth themselves in the future.

In short, dark fibre offers operators virtually unlimited capacity expansion and scalability.

However, it won't be for everybody. Like any solution, dark fibre is an investment that comes with its own complexities – from the need for technical expertise to the requirement to pay business rates by the kilometre (also known as fibre tax).

At Virgin Media Business Wholesale, we help operators find the right connectivity solution for their requirements. Whether that's dark fibre or a managed service, we pride ourselves on building successful partnerships based around our team of industry experts.

This whitepaper will discuss where dark fibre could be used to support organisational ambitions, along with some challenges that might need to be considered in order to make an informed decision based on an operator's network needs.

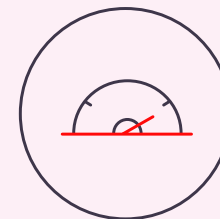


Who is dark fibre for?

What is it about dark fibre that makes it attractive to a range of organisations?

Historically, fibre would be laid by telco network providers to deliver their own voice and data services. The thought of making their layer 1 infrastructure available to others was unheard of.

However, this dynamic shifted over the last few years. Regulatory change, greater demand, new market players, and a change in perceptions have made dark fibre a more attractive proposition for many operators.



New technology will require greater bandwidth

The demand for high bandwidth connectivity comes hand in hand with the continued rise in demand for streaming, online gaming and business cloud applications and the sheer pace of innovation at the application layer.

Concepts such as the metaverse, smart cities, driverless cars and other edge applications will require huge amounts of data. And the continuing rollouts of 5G and fibre to the premises (FTTP) are critical in enabling many of these innovations, giving consumers ready access to the high bandwidth connections they need.

The exact timeline for the mainstream adoption of these cutting-edge innovations however is uncertain, making it harder for network operators to predict total network capacity requirements in future. As a result, more operators want greater control of their networks and upgrade pathways.

That is why dark fibre has become a popular option for those with the know-how and desire to own and manage their own infrastructure. It represents an investment in the future – allowing operators to scale their networks to meet the demands of new technologies.



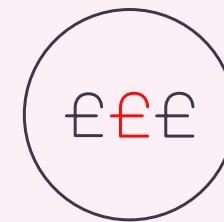
Long-term control and security

By investing in dark fibre, businesses can ensure the reliability, scalability and security of their networks for years to come.

Dark fibre provides a combination of scalability and flexibility to operators, enabling them to increase network capacity in response to changing bandwidth requirements at the time of their choosing.

Businesses also get the long-term security that comes with knowing dark fibre is theirs for a fixed period. They won't be beholden to a service provider if they need additional bandwidth or services.

It also gives the technical flexibility to modify their network design and switch out equipment as needed to support the changing demands on their network over time. This control is important if network performance is critical to an application or use case.



Managing costs

Dark fibre is a great way to control operating costs, particularly when scaling up a network over time, because the operators own the end-to-end management and maintenance of the product. While operators may still need to buy new hardware, they can make such purchases as a one-off – treating the hardware as a CAPEX asset rather than OPEX. Perfect for those who are looking at high bandwidth requirements down the line.

In addition to the hardware benefits, the dark fibre product itself gives greater P&L flexibility than managed services. Depending on a business's financial and cashflow preferences, we offer the choice of a sales-type lease or an operational lease.

A sales-type lease is a long-term lease which allows you to capitalise your purchase of a Dark Fibre service from Virgin Media Business Wholesale. This can help reduce the ongoing operational expenditure associated with infrastructure costs, leading to EBITDA improvement.

However, if a shorter contract term makes more sense for an organisation, we also offer a more traditional operating lease model.



Things to consider before taking the plunge

We've seen that dark fibre has many benefits. But it's not without its considerations. It's worth being aware of what businesses might need to consider before committing – and how having the right partner in place can help them navigate any difficulties.



Fibre Tax – what is it?

The moment you light a length of dark fibre, it becomes liable for business rates – the so-called “fibre tax.”

The business that lights the fibre is generally considered the rateable occupier – meaning they must foot the bill. This applies if you’re leasing dark fibre from another provider.

Economies of scale are also a factor, particularly for those working at a more regional level. You’re charged by the kilometre for the entire length of fibre on your network. For short fibre networks, the rateable value (RV) can be as much as £1,800 for a single kilometre, falling to £150/km for longer networks of over 1,000km.



You can find more information on fibre tax in our guide by clicking here

The need for expertise

While dark fibre can potentially help you manage long-term costs, organisations will need to ensure they have the skillset required to build and operate a network. And they will need to factor in some additional labour and technical considerations.

Equipment may require maintenance from time to time – which could involve sending out an engineer to fix an issue. And because Dark Fibre is often used to underpin business critical infrastructure, issues need to be resolved as quickly as possible. That’s why consideration needs to be given to the number of engineers you have on hand and where they should be based. Because of the size of our network, Virgin Media Business Wholesale has 24/7 service with engineers in every major city. But this will not be practical for every organisation.

It’s also worth bearing in mind that for longer dark fibre routes (over 80-100km), the signal will need to be amplified at the right location using the right equipment – sometimes four or five times over the network. Procuring the rackspace is an additional complexity, and exposes an operator to the variable costs of power directly. We can offer colocation sites to host amplification equipment or run fibre between third-party sites to amplify the signal.

Finding the right option for you

For organisations that have the capital and growth appetite for it, dark fibre can be a great asset.

However, businesses need to have a long-term plan in place to make sure they can be confident they have a long-term, sustainable solution with a trusted partner.

Depending on their needs, businesses may want to consider alternatives, such as high bandwidth managed services like optical high capacity services (HCS), that offer a fixed network path with dedicated bandwidth to enable a super-fast high capacity point-to-point connection, or 10G Ethernet connections.



If you want to talk through any of these options in more detail, we’re here to help. Contact us on WholesaleBD@virginmedia.co.uk or get in touch with your account manager for more information.



Dark Fibre vs Managed Service



You are responsible for the management and maintenance of the service(s) you run over the fibre



You will choose, procure, and install the equipment needed to light the fibre over the life of the lease



You can change or upgrade the equipment – giving you the ability to scale and expand depending on your future requirements



You are responsible for the maintenance of the hardware or service. The supplier maintains the physical fibre – although you will need to monitor its status and performance



You are liable for the business rates associated with operating the fibre, known as fibre tax (see below)



You will look after network design – working jointly with a supplier on fibre design – and build

DARK FIBRE



The service provider provisions and manages your service for the length of a pre-agreed term



Your service provider is responsible for all equipment based on the specifications of your service



Your service provider delivers connectivity against agreed specifications based on the terms of the contract



Your service provider will be accountable to agreed SLAs



Fibre tax is covered by your service provider



Your service provider will provide access to their network - or use other providers' networks on a backhaul basis where theirs is unavailable.

Managed services can also be jointly worked - for example, to deliver diversity from another carrier

MANAGED SERVICE



Why Virgin Media Business Wholesale?

Virgin Media Business Wholesale is focused on leveraging our fixed national infrastructure to help other network operators.

We can provide both managed services and dark fibre routes across our entire footprint. And we've got the experience and expertise to help businesses find the right solution for all their requirements.

The largest available dark fibre network coverage

We have the second largest fixed network in the UK spanning over 190,000km of the UK. Unlike some other providers, we offer dark fibre across our entire footprint with no regional restrictions.

Project delivery expertise

Our dedicated teams work collaboratively with network operators to design and build the most suitable solution for their needs. Consultative pre-sales teams explore all route options, and our major programme delivery function is SLA-backed to deliver reliably.

Bastions of backhaul

We're already one of the UK's leading backhaul infrastructure providers, underpinning much of the UK's digital infrastructure. We've completed some of the largest and most complex dark fibre infrastructure projects for carriers, mobile operators hyperscalers, broadcasters, data centre operators and altnets across the UK.

Flexible commercial solutions

We make our network infrastructure work for operators with flexible commercial arrangements that can maximise available capital. Choose between a more traditional operating lease or longer-term sales-type lease arrangement depending on the business model. Our commercial teams are on hand to help find the right arrangements and commercial terms.

How we deliver dark fibre

1



Our pre-sales teams work with you to understand your requirements in full and find a commercial option that suits you.

2



We'll then pass you on to our Major Programmes team, a ring-fenced team of subject matter experts who are dedicated to getting you up and running.

3



We give you access to a pair of fibres from a larger fibre bundle on our network which is available to own via a sales-type lease or to rent through an operating lease.

4



Our team will then arrange for the required fibre volume to be spliced and installed across one of the thousands of splice points from our point of presence (PoP) sites to strategic interconnect locations or data centres.

5



The route is tested end-to-end to comply with Virgin Media O2's Dark Fibre specifications and then a BIS (Brought Into Service) certificate for the circuit is issued along with a handover pack containing test results, measurements and KMZ route map when requested.

6



We can support your project requirements in a number of ways. For example, the density of our network gives you more flexibility to access our Dark Fibre without the need for lengthy digs. We can also dig a new dark fibre route for you if required, or offer sub-duct, subject to capacity.

7



You're free to add your equipment and manage the fibre based on your requirements.

Our network

Virgin Media O₂ owns and operates the second-largest fibre network in the country, with more than 190,000km of fibre cabling. Our network connects over 160 strategic data centre sites, 1,300+ BT exchanges and 336 dedicated Virgin Media O₂ PoPs around the country, each covering a geographical area roughly equivalent to 10 BT exchanges. Through our Wholesale Fixed division, we help leverage this infrastructure to help other businesses reach their goals.

And we're continually investing to bring our network to more of the UK. As part of our mission to upgrade the UK, Virgin Media O₂ has committed to invest at least £10bn over the next five years in the UK. These funds will support the upgrade and improvement of our core network and infrastructure in more parts of the country, building on our existing fibre network expansion activity.

In addition, Liberty Global and Telefónica – the joint venture backing Virgin Media O₂ – are working alongside investment firm, InfraVia Capital Partners, to invest an additional £4.5bn to bring a new infrastructure into greenfield sites of the UK. The investment is set to bring the VMO2 fixed network to approximately 80% of premises by 2027, providing greater wholesale connectivity options to more of the UK.

“

The investment is set to bring the VMO2 fixed network to approximately **80% of premises** by 2027



Our network map



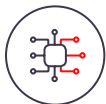
PoP sites OFF

Data centres

Fibre network



2nd largest
fibre network
in the UK



336
Virgin Media points
of presence (PoPs)



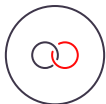
Largest dark
fibre coverage
available across our
network



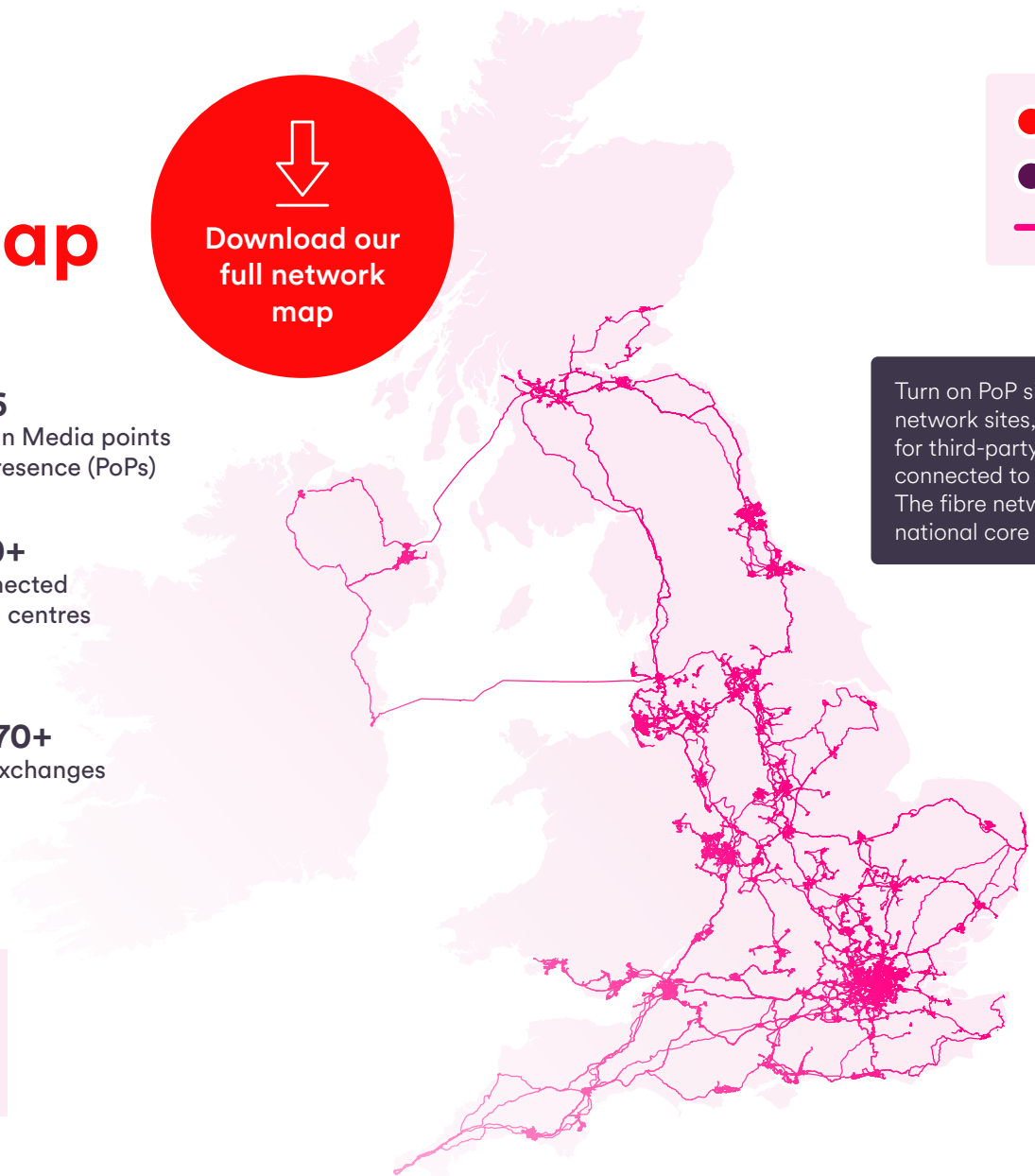
160+
connected
data centres



190,000+ km
of fibre distance



1,370+
BT Exchanges



Turn on PoP sites for Virgin Media network sites, and data centres for third-party hosting facilities connected to Virgin Media services. The fibre network is Virgin Media's national core fibre network.



Contact us today to discuss how we can help you at WholesaleBD@virginmedia.co.uk or get in touch with your account manager for more information.



BUSINESS

Connect with us



virginmediabusiness.co.uk/wholesale

Dedicated to your growth

— PROUD TO BE YOUR PARTNER —