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Internet neutrality: Options for Britain

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Foreword

Over the past 30 years the Internet has evolved from a simple novelty to an all-pervasive element of human existence. It connects people to people and allows for the rapid dissemination of vast quantities of data. Apart from allowing rapid communication, it has made hard data storage, from compact discs to video tapes, redundant, while the phenomena of internet shopping has changed the face of the British high street. The impact of the Internet will continue to be felt; indeed, it will grow as the Internet of Things emerges.

Fundamentally, the Internet is part of the United Kingdom's (UK) national critical infrastructure. So important is it that safeguards are needed to protect it and users from nefarious actors and unfair business practices. Getting this balance right, though, is a work in progress and requires constant reform as the Internet evolves as a medium for the transfer of information. Already, it may be the case that rules and regulations designed to protect the consumer have undermined the competitiveness of Internet Service Providers (ISPs) in free and open countries, particularly those which provide infrastructure, relative to those in large authoritarian rivals such as the People's Republic of China (PRC).

With this in mind, the Council on Geostrategy offers this Policy Paper on internet neutrality, by Dr John Hemmings, as part of its new 'Geoeconomics Programme'. This programme focuses on the importance of geography and the environment, economics, science and technology to the success of the UK and other free and open countries during an age of increasing struggle and competition. This particular paper looks at how net neutrality rules might be reformed to stimulate the sector's competitiveness in free and open nations, helping such countries regain their place at the vanguard of internet development and preventing authoritarian powers from capitalising on new technologies.

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Executive summary

- The advent of the Internet has spawned a revolution in social, governmental, and economic practices. New generation technologies, such as online meetings and conferences – increasingly common since the Covid-19 pandemic – remote healthcare, smart cities, and autonomous vehicles indicate the direction of connectivity and are putting ever more pressure on the current internet network and the economic model sustaining it. Since its departure from the European Union (EU), the United Kingdom (UK) has been afforded the opportunity to rethink its approach towards internet governance – particularly the much-debated issue of 'net neutrality'.

- It is clear that after the September 2021 Office of Communications (Ofcom) review, strict adherence to 'pure' net neutrality has been sidelined for a more flexible approach. This will prepare internet service providers (ISPs) for the roll-out of 5G, as well as the development of augmented and virtual reality ecosystems.

- As His Majesty's (HM) Government considers the future of Britain's network, it is important that the net neutrality principle is adjusted to suit the current internet environment. This should bolster the industry. In this context, this Policy Paper recommends that:
    - ISPs be allowed to apply different charges to large users of low-latency data;
    - Full transparency be shown surrounding which companies were given discriminatory fees. An independent commercial court could also be set up to settle disputes from firms that disagree with the new fee schedules;
    - Greater consultation be conducted into how a 'fair share' of the burden of building out new network infrastructure can be achieved;
    - Guidance and regulatory oversight be provided to ISPs which prohibits discriminatory or monopolistic practices and creates an easy-to-use guide that safeguards new

businesses and promotes specialised services for new 5G-enhances applications;
- Greater protection be given to those ISPs considered major government partners in building, managing and maintaining critical national infrastructure from market forces;
- An independent commission be set up to examine the sector's sustainability and advise HM Government; and,
- More tax incentives and UK funds are generated for public-private partnerships in digital infrastructure research and development.

1.0 Introduction

The advent of the Internet and information communications technology has continued to herald changes of considerable social, economic, and political importance. The Internet, its common usage by regular citizens, governments, and large corporations and its continued evolution as it facilitates different models of communication, business, and entertainment, presents His Majesty's (HM) Government with challenges in regulation, standards, and values. Those who build and maintain the network are part of a commercial enterprise as well as a part of the nation's critical national infrastructure, a duality which carries a certain weight. For better or for worse, the Internet has fundamentally changed how business is conducted and how citizens interact with the world. As the UK's 2022 National Cyber Strategy notes:

> ...the global expansion of cyberspace is changing the way we live, work and communicate, and transforming the critical systems we rely on in areas such as finance, energy, food distribution, healthcare and transport. In short, cyberspace is now integral to our future security and prosperity.[1]

In addition, the UK's departure from the European Union (EU) means that it is no longer bound by a common policy on the Internet. For this reason, it is important to establish the right rules and architecture to govern and regulate the Internet as these will shape the future of the nation.

In many ways, the importance of the Internet is why the debate over the future technical standards of broadband in obscure forums such as the International Telecommunications Union (ITU) has become an important geopolitical issue in its own right. The ITU debate has seen experts from the People's Republic of China (PRC), ruled by the Chinese Communist Party (CCP), promote standards which would afford states the ability to 'embed a system of centralised rule enforcement into the technical fabric of the internet.'[2] The rise of an alternative vision and model of the Internet has forced free and open

[1] 'National Cyber Strategy 2022', Cabinet Office (UK), 15/12/2022, https://bit.ly/44aVXou (checked: 20/09/2023).
[2] Madhumita Murgia and Anna Gross, 'Inside China's Controversial Mission to Reinvent the Internet', *Financial Times*, 27/03/2020, https://bit.ly/3rmTs4L (checked: 20/09/2023).

countries – the UK important among them – to debate the future of the platform at both the national and international level.

Central to that debate is the political assumption that the Internet should protect certain rights of its users. But what is the trade off between guarding user rights and regulating content? How much power should HM Government have to regulate the Internet, for example? Should the UK keep existing net neutrality laws in place now it has left the EU? Then there is the economic assumption that the Internet's costs should be minimal for end users. But who pays for its services as those change in breadth and scope – like with streaming services – and should the private sector, the state, or citizens foot the bill for maintaining such changes? How should internet service providers (ISPs) provide those on-the-horizon services – such as near-time health or remote surgery – which have immense data requirements for low-latency data transmission? And what are the effects of this subscription model on the overall telecommunications market?

As this Policy Paper will note, there are arguments on both sides of the ledger in terms of net neutrality. There are some within the sector who feel that the strict application of net neutrality imposes unequal costs on various stakeholders, which disproportionately impacts ISPs over content providers. There is a case to be made, for example, that this structure has created a very lean model for ISPs, making them highly susceptible to the predation and penetration of state-supported telecommunications equipment providers, such as Huawei and ZTE. Arguably, the PRC's subsidised model enabled its companies to take advantage of smaller cash-strapped ISPs in North America and larger ones in Europe, taking a commercial issue into the national security arena. While the advance of Chinese companies into the European telecommunications market has been slowed for the time being, free and open countries have not changed their telecommunications market substantively in the meantime, meaning that certain ISPs remain vulnerable to subsidised competitors from authoritarian states.

These are just some of the issues at the heart of the UK's current debate on net neutrality. While this Policy Paper does not seek to take sides in that debate, it acknowledges that the issue brings to light many of the cleavages which confront free and open nations on how they manage, regulate, and build the future of the Internet. HM Government originally set out its position on net neutrality in 2010 in a statement

published by Ofcom, the regulatory body which oversees the Internet in the UK.[3] It defined 'net neutrality' as the idea that internet users – both consumers and content providers – are in control of what they see and do online, not ISPs.[4] In other words, it is the principle of equal access for those who provide the 'content' on the Internet from those who provide its 'pipes', differentiating between the content providers and the ISPs. Some argue that net neutrality is a basic assumption of the World Wide Web. In its 2010 statement, Ofcom realised that increased demand was putting ever-more pressure on ISPs and the infrastructure upon which the Internet was built. At the time, responding to changes in the European Union (EU) framework and corresponding British law, Ofcom sought to recognise two forms of internet traffic management.

The first of these is called the 'best efforts' internet access, also known as the 'open internet' or the 'managed services internet', in which ISPs seek to convey all traffic equally. This latter approach recognises that some data would be prioritised – such as that carried by emergency services. Ofcom's balancing act recognised that this combination of the two approaches amounted to 'a form of discrimination, but one which is normally efficiency enhancing.'[5] As with the American, the British approach has subsequently waxed and waned, becoming more closely aligned with 'net neutrality' around 2015 before becoming looser again over the past year. The 2017 decision by the United States (US) Federal Communications Commission (FCC) to overturn net neutrality rules in America – and the subsequent decision by many US states to implement these at the local level – has made the issue a politically charged one, divisive across party lines. Even the EU codification of net neutrality looks as though it may soften after Thierry Breton, European Commissioner for the Internal Market, launched a consultation on the future of the telecommunications sector and its infrastructure.[6] Both of these, combined with Britain's departure from the EU, begs the question: what is the best approach for the UK?

[3] 'Traffic management and "net neutrality"', Ofcom, 24/06/2010, https://bit.ly/43d1ECa (checked: 20/09/2023).
[4] 'Consultation: Net neutrality review', Ofcom, 21/10/2022, https://bit.ly/3D1Cmft (checked: 20/09/2023).
[5] 'Traffic management and "net neutrality"', Ofcom, 24/06/2010, https://bit.ly/43d1ECa (checked: 20/09/2023).
[6] Foo Yun Chee, 'EU's Breton plans consultation on Big Tech and telecoms network costs', *Reuters*, 14/02/2023, https://bit.ly/3O1paNT (checked: 20/09/2023).

2.0 The British situation

In the UK, net neutrality was previously a matter of EU law, not merely a regulatory or normative matter. According to a 2015 parliamentary report, net neutrality is associated with the concept of an 'open internet' and is considered a 'founding principle of the World Wide Web' and sits in a much more competitive environment (in terms of ISPs).[7] In a 2010 speech at the *Financial Times*' World Telecoms Conference, Ed Vaizey, then Minister for the Department for Digital, Culture, Media, and Sport, highlighted that 'unlike in the UK, in some parts of the US consumers have no choice which ISP they use because only one offers a service in their area.'[8] As a result, ISPs would have total control over the services and applications those consumers were able to enjoy, an overriding concern for HM Government. In the speech, Vaizey laid out three principles, which have come to underpin Britain's own approach:

1. Openness: consumers should have the ability to access any legal content or service;
2. Transparency: the fundamental principle in which ISPs must present information about their services, including the nature and extent of their traffic management policies; and,
3. Maintaining an environment conducive to investment and innovation.

In July 2012, BE, BT, BSkyB, KCOM, GiffGaff, O2, Plusnet, TalkTalk, Tesco Mobile, and Three signed up to the Open Internet Code, which seemed to indicate broad acceptance of the standards of open internet and net neutrality in the UK.[9]

Since Brexit, the UK is no longer subject to EU law and HM Government has had an opportunity to recalibrate its approach towards net neutrality. In September 2021, Ofcom launched a consultation to review the current net neutrality framework to determine whether it

[7] David Hirst, 'Regulating the web: The open internet and net neutrality', House of Commons Library, 18/05/2015, https://bit.ly/3CZjwpg (checked: 20/09/2023).
[8] Ed Vaizey, Speech: 'The open internet: oral statement to Parliament', 17/11/2010, https://bit.ly/3O1ppZj (checked: 20/09/2023).
[9] ISPs launch open internet code of practice, Department for Digital, Culture, Media and Sport (UK), 30/08/2012, https://bit.ly/44kp3lt (checked: 20/09/2023).

was still fit for purpose. In addition to being prompted by the UK's departure from the EU, the Ofcom decision was fed by the recognition that the next generation of wireless 5G technologies would be a revolutionary new paradigm, requiring a major overhaul in current data management standards. This is because some of the promised technologies of 5G – such as smart factories, remote surgery or autonomous vehicles – will not function with current levels of network traffic latency. In short, 5G is an ultra-fast, ultra-reliable, ultra-low latency signal which has the potential to be 100 times faster than the previous 4G standard through the use of higher spectral efficiency and newer edge-computing power.

Box 1: Rules for ISPs according to Ofcom (adapted from the original)

- By law, ISPs must treat all internet traffic on their networks equally, and not favour certain websites or services. The rules set out in this legislation are enforced in the UK by Ofcom.
- ISPs must not block access to, slow down ('throttle'), or discriminate in other ways between internet traffic on its network, unless it is necessary to do so for legal, security or emergency reasons.
- ISPs must not manage their internet traffic to gain a commercial advantage – for example, they must not redirect users away from a website, to one they are affiliated with, or slow down the services of rival organisations.
- ISPs may take *reasonable* measures to manage their internet traffic, so that their networks run smoothly. But these measures should not be taken for longer than necessary. ISPs must be clear about their traffic management policy and practices.[10]

It would appear from its consultation process that Ofcom is intent on adopting a more flexible and pragmatic net neutrality framework (see Box 1). It has recognised that while net neutrality is important, these new emerging technologies will require 'specialised services' and data optimisation in order to enable those users of new machine-to-

[10] 'What is net neutrality?', Ofcom, No date, https://bit.ly/3NFeROi (checked: 20/09/2023).

machine communications services.[11] In its 2022 review, Ofcom offers guidance when ISPs can provide these 'specialised services' as well as offering new guidance which would allow premium quality retail services for those users of virtual reality applications.[12] This sounds like the ominous 'two tracks' of internet access, but at the same time, it is difficult to see how the UK can bridge this gap and still be open for innovation.

[11] 'Consultation: Net neutrality review', Ofcom, 21/10/2022, https://bit.ly/3D1Cmft (checked: 20/09/2023).
[12] *Ibid.*

3.0 Net neutrality: The arguments for

For practical purposes, the legal concept of net neutrality was first introduced in the early 2000s by legal scholars like Tim Wu, until recently Special Assistant to the President of the United States for Technology and Competition Policy (2021-2023), who sought to find a balance between the need for private and public interests in a competitive and innovation-friendly internet environment.[13] Wu argued that net neutrality was no different from evolutionary competition in any privately-owned environment, whether a telephone network, operating system, or retail store, in that it sought anti-discriminatory approaches towards data packets, be they audio, video, or other heavy-usage applications. He also noted that operators – or ISPs – had a tendency towards short-term gains and sought bans or restrictions on new or emerging applications such as WiFi devices and Virtual Private Networks. While their interests – price discrimination and bandwidth management – were legitimate, Wu argued that these practices could create market distortions and threaten the future of new applications. He thought that ISPs would create 'express lanes' for companies with greater financial resources or even block or hamper services operated by rival companies. While his innovative paper suffered from a lack of market analysis on the telecommunications sector – his expertise was after all on technology and law – it has had a seminal impact on the debate and has been codified in legislation across the US, the UK, and European countries.

There are broadly three different lines of argument held by those in favour of net neutrality. The first argument is rights-based: net neutrality is seen as protecting freedom of expression, political or otherwise; the second falls broadly under a 'fair' regulatory regime argument; and the third argument relates to the stimulation of innovation and competition.

3.1 Freedom of expression

This argument is most held by digital rights and consumer rights

[13] Tim Wu, 'Network Neutrality, Broadband Discrimination', *Journal of Telecommunications and High Technology Law*, 2 (2003), pp. 141-179.

advocates, who hold that net neutrality prohibits companies from blocking content they do not like or with which they disagree. In 2017, Jessica Rosenworcel, then Commissioner of the FCC and now its Chair, for example, asserted in her Dissenting Statement that 'net neutrality is internet freedom'.[14] She argued that the FCC's repeal of net neutrality would give ISPs 'extraordinary new power from this agency. They will have the power to block websites, throttle services, and censor online content.'[15] The American Civil Liberties Union asserts that without legal guarantees, telecommunications companies can

> ...scrutinise every piece of information we send or receive online...they can programme the computers that route that information to interfere with the data flow by slowing down or blocking traffic and communicators that they don't like, and speeding up traffic they do like or that pays them extra for the privilege.[16]

In terms of freedom of speech, the primary driver for this sort of control is where companies exert jurisdiction over mediums to prevent or degrade viewpoints with which they disagree. For example, ISPs may block or degrade traffic to and from websites that are critical or which reveal poor service or performance. They may also limit traffic to and from websites which hold political viewpoints with which they or their business partners disagree. They might even, as one example, wish to 'degrade or block access to union sites during a labour conflict'.[17] The example of the telephone as a utility is often evoked by those who prioritise freedom of expression, since, by the framework, ISPs must give equal treatment to all users of the service, no matter their viewpoints.

3.2 Consumer protection

Advocates of net neutrality also posit that it protects consumers by preventing ISPs from speeding, slowing, or otherwise interfering in the

[14] 'Dissenting Statement of Commissioner Jessica Rosenworcel', Federal Communications Commission (US), 14/12/2017, https://bit.ly/3XV9jEd (checked: 20/09/2023).
[15] *Ibid*.
[16] 'What is net neutrality?', American Civil Liberties Union, 15/12/2017, https://bit.ly/3O0F7mz (checked: 20/09/2023).
[17] *Ibid*.

quality of select online content. By this account, ISPs might create 'fast lane access' for those corporations or companies which are willing to pay more for the service. Those smaller companies, regular citizens, non-profit organisations, and others would end up with a second-tier service. In such a case, the internet experience might penalise those content providers; studies have shown consumers who are used to certain speeds will often lose patience with slower websites.[18] It is notable that on 27th April 2017, the same day Ajit Pai, then Chairman of the Federal Communications Commission, announced the repeal of net neutrality rules, Comcast – the largest ISP in the US – removed its three-year-old pledge not to 'prioritise internet traffic or create paid fast lanes' from its webpage.[19]

Then there is the possibility ISPs will break internet access into different 'service bundles'. Cable television 'bundles' in the US provide a good example.[20] A consumer who wants to purchase their cable television through Spectrum, Verizon, or Direct TV faces three very different services, with three types of access, and three types of channel availability. Often, it is not possible to get specific channels – HBO, for example – with one television deal, but it is possible with another. Or one pays a premium to get access to all channels. Ultimately, the fear is that ISPs would seek to break down internet access through similar 'bundles'. A cheaper bundle might include social media, but not streaming services for example since those services require more bandwidth. In such a system, consumers might lose access to large portions of the internet, according to how much they were willing to pay. This 'Balkanisation' of the Internet would clearly be unwelcome.

3.3 Supporting innovation

When the FCC initially repealed net neutrality in 2017, a number of content providers responded strongly against it. One of these was Michael Beckerman, then President and Chief Executive Officer of the

[18] Nicholas Economides, 'Why imposing new tolls on third-party content and applications threatens innovation and will not improve broadband providers' investment', New York University, 12/10/2010, https://bit.ly/3CZS4I7 (checked: 20/09/2023).
[19] Jon Brodkin, 'Comcast deleted net neutrality pledge the same day FCC announced repeal', *Ars Technica*, 29/11/2017, https://bit.ly/3rjKaGY (checked: 20/09/2023).
[20] Lawrence Lessing and Robert W. McChesney, 'No Tolls on The Internet,' *The Washington Post*, 08/06/2006, https://bit.ly/3XHSEDC (checked: 20/09/2023).

Internet Association, a trade group for technology companies in Washington, DC, who stated:

> Companies can come and access the entire global market without somebody charging a toll or blocking their ability to compete. And that's what's made the internet so great and will continue [to make the internet great].[21]

Meanwhile, Nicholas Economides, Professor of Economics at the New York University Stern School of Business, has argued that the value of content and applications on the Internet adds to the number of users, who in turn – as their numbers increase – add additional content and applications to the Internet, creating what he calls a 'virtuous cycle that dramatically expands the value of the network as its size grows.'[22] The fact that new businesses can innovate and reach consumers directly creates an 'innovation without permission' internet, keeping barriers relatively low for new entrants. According to Ryan Singel, Open Internet Fellow at Stanford Law School's Centre for Internet and Society (2017-), net neutrality makes it easier to start online businesses than starting traditional 'bricks and mortar' businesses.[23] The use of eight servers only cost his business US$289 (£227.50) a month, a relatively small cost.[24] Singel argued that without net neutrality rules in place, broadband providers would be allowed to charge all websites – including start-ups – simply to access the ISPs' subscribers, something which would 'totally upend the economics of the internet.' Furthermore, as ISPs do not internalise value from network effects which give spillover benefits to consumers and society, they are unlikely to keep prices at levels which benefit small companies and start-ups.

[21] David McCabe, 'Beckerman: Internet industry ready to fight for net neutrality', *Axios*, 10/07/2017, https://bit.ly/3NZSFjg (checked: 20/09/2023).
[22] Nicholas Economides, 'Why imposing new tolls on third-party content and applications threatens innovation and will not improve broadband providers' investment', New York University, 12/10/2010, https://bit.ly/3CZS4I7 (checked: 20/09/2023).
[23] Ryan Singel, 'Expect Fewer Great Startups if the FCC Kills Net Neutrality', *Wired*, 12/12/2017, https://bit.ly/44byeWf (checked: 20/09/2023).
[24] *Ibid.*

4.0 Net neutrality: The arguments against

In the opposing corner are those companies and stakeholders arguing that, in fact, net neutrality has created as many problems as it has solved. Such counterarguments fall into four broad baskets. The first argument hinges on unfair burden-sharing, primarily felt by the ISPs. This argument asserts that 'net neutrality' is a form of price-fixing, which distorts the market and provides fair lean margins. A second argument asserts that these lean margins directly impair their ability to improve efficiencies in network management and reduce costs to consumers. A third argument states that if given these additional revenue streams from charging content providers to drive future research and development, ISPs could channel them into innovation in the 'pipes' or hardware infrastructure. The fourth and final argument against net neutrality deals with the single-subscription model with which it is associated. It is this business model – placing heavier burden on ISPs over content providers – and the lean operational environment it produces which exposes the wider system to national security risks. By this argument, it was lean costs which pushed strapped ISPs and governments to favour cheaper equipment from vendors, such as Huawei, which are now designated by HM Government as 'high risk', as they sought to replace ageing 4G broadband infrastructure with 5G.[25]

4.1 Market distortions

The main argument related to the impact of market distortions on net neutrality primarily is made by Gerald R. Faulhaber, Professor Emeritus of Business Economics and Public Policy at the University of Pennsylvania Law School. Faulhaber notes that the effect of a government regulator in any market is to push participants to petition the regulating body on behalf of their individual interests, arguing these are in the 'public interest'. He argues that 'when regulators are open for business, firms understand that pleasing or manipulating the regulators is more important than innovating, investing, and pleasing

[25] 'Proposals to issue a designation notice and designated vendor direction for Huawei – government response to consultation', Department for Digital, Culture, Media and Sport (UK), 13/11/2022, https://bit.ly/3QIYoff (checked: 20/09/2023).

customers.'[26] Supporters of this line of reasoning also counter that there is little evidence a 'light touch' regulatory approach to the internet – as existed prior to net neutrality rules – would create 'fast' or 'slow' lanes. The argument around market distortion has taken on more salience with the emergence of high-bandwidth content providers (such as BBC, Netflix, YouTube, and other streaming sites) as well as virtual meeting sites (such as Google Meet, Microsoft Teams and Zoom) which have sprung up in the wake of the Covid-19 pandemic. While ISPs are compelled to treat all users alike, the fact is that some use far more bandwidth than others and exert far higher costs on ISPs. For example, if millions of customers want to livestream cricket on BBC iPlayer, a lot more bandwidth and network resources would be required than if those millions were trying to access a simple website like Wikipedia. ISPs argue that the rise of fast-streaming companies is not a feature of a 'free market' but rather a feature of market distortion caused by net neutrality regulation. ISPs – and ultimately the consumer – are being asked unfairly to assume a disproportionate share of the costs and resource usage of the Internet to allow streaming services to flourish.

4.2 Improved network management

Given that under a net neutrality framework ISPs must treat all data equally, they struggle to manage networks where certain content providers are using a significant amount of broadband. Naturally, these cause real issues for traffic and for upholding network constancy for other consumers. The question is: why should they not charge content providers that stress the network? Faulhaber notes that there are various economic models for service providers which differentiate between the consumers and content creators. For example, as shown in Table 1, cable television companies only charge subscribers, but newspapers actually charge both subscribers and advertisers – i.e. those companies which wish to access the market.

[26] Gerald R. Faulhaber, 'Economics of Net Neutrality: A Review', *Communications and Convergence Review*, 3:1 (2011), pp. 53-64.

Table 1: Economic models of service providers

	Subscriber	Content provider	Economic model
Newspapers	Pays	Pays (advertisers)	2-user model
Cable television	Pays	n/a	1-user model
Broadband	Pays	n/a	1-user model

Then there are studies, while not conclusive, which indicate greater efficiencies may lay in charging costs to heavy-users of broadband. In one study, the effects of three different models of bandwidth quality were tested.[27] In the first model, ISPs were compelled to only offer the highest level of broadband, effectively pricing out lower-quality service consumers from the market. In the opposite model, ISPs were compelled to offer the same level of service to all, effectively degrading the level of service to what the model called 'inefficiently low'. The third and most successful model was where a single quality was required, but content creators were charged. This would seem to indicate that a model by which ISPs pay additional costs would improve overall network efficiency. In response to this, large content providers like Netflix have argued that they already pay for direct connections to large ISPs and run dedicated computer servers deep inside these firms. These are known as 'peering connections' and 'content delivery servers',[28] and this form of burden-sharing already allows ISPs to manage the large usage of data that streaming services impose.

4.3 Innovation and investment

The third argument is that rather than feeding innovation as Wu and Economides allege, net neutrality actually harms it. This argument is often made by ISPs themselves. It states that content providers are able to innovate and create online businesses easily, but that this innovation in 'software' is at the expense of innovations in the advancement of network infrastructure itself since ISPs are essentially subsidising innovation for content providers. The end user or consumer already has open access to services at fixed prices, so they argue that in what is already a very lean and competitive market, there is less and less

[27] Benjamin Hermalin and Michael Katz, 'The economics of product-line restrictions with an application to the network neutrality debate', *Information Economics and Policy*, 19:2 (2007), pp. 215-218.
[28] Robert McMillan, 'What Everyone Gets Wrong in the Debate Over Net Neutrality', *Wired*, 23/06/2014, https://bit.ly/3purEuZ (checked: 20/09/2023).

capacity to resource future innovation, pushing them towards the cheapest providers of infrastructure.[29] Arguably, this business model – mixed with the immense capital resources which ISPs have to provide when laying next-generation infrastructure (4G to 5G, for example) – is what has stymied the ability of British ISPs to foster 5G innovative technologies in favour of their foreign – well-subsidised – competitors.

To be clear, the argument is not that net neutrality itself is responsible for the economic model which currently undergirds broadband and internet services. But that the 'subscription model' conflated with net neutrality – whereby only the consumer pays for internet access – means that ISPs struggle with slim margins. Lacking the wherewithal to push for research into next-generation 5G broadband infrastructure, they have fallen behind market leaders in Asia, such as Huawei and ZTE.

4.4 The national security argument

If one looks at the long decline of telecommunications providers from free and open nations and their inability – with the exception of NTT, Nokia and Ericsson – to invest in 5G infrastructure options, one can see why some industry insiders point to the current economic model as being deeply flawed. In essence, this argument holds that the core business model associated with net neutrality – that of the single-user payment system – has so hurt the industry as to cause their vulnerability to external national champions, funded by national 'EXIM' banks by rising powers such as the PRC. In the 1990s, the two largest telecommunications equipment manufacturers in the world were Lucent and Nortel, both based in North America. By 2008, Nortel was bankrupt – with much of its intellectual property and business in the hands of Huawei – and Lucent broken up and sold to Alcatel, a French company.[30]

Robert Atikinson, President of the Information Technology and Innovation Foundation, has argued that rather than protect these companies as parts of the national critical national infrastructure, US policymakers had put their abiding faith in free markets. Since free

[29] David Hirst, 'Regulating the web: The open internet and net neutrality', House of Commons Library, 18/05/2015, https://bit.ly/3CZjwpg (checked: 20/09/2023).
[30] Jameson Berkow, 'Nortel hacked to pieces', *Financial Post*, 25/02/2012, https://bit.ly/3QzgUqf (checked: 20/09/2023).

markets favoured content providers over ISPs under the single user payment system, these companies found themselves consistently under fiscal pressure and made decisions which would lead to their downfall: they cut research and development budgets and began focusing on services rather than equipment during the 2001-2002 downturn. The situation in the UK was little better.

In accordance with this line of reasoning, it was a lean business environment which pushed many ISPs and traditional telecommunications companies over the edge in 2001. Consequently, companies like BT sought low-cost, high-risk suppliers for UK infrastructure when British equipment providers – like Marconi – failed or collapsed.[31] In April 2005, BT dealt Marconi a fatal blow[32] as it picked eight rival telecommunication companies to help build its new network.[33] This original decision in 2003 to allow companies from the PRC, such as Huawei, into the UK's network infrastructure was initially made by the Department of Trade and Industry, with officials citing the economic case for its inclusion in a subsequent parliamentary inquiry by the Intelligence and Security Committee.[34] As a result of Marconi's closure, 2,000 jobs in high-technology research and development were terminated and the UK lost a domestic infrastructure equipment champion, a glaring absence when 5G emerged without a strong British provider.

While Huawei has been propelled into national security debates by the focus of the administration of Donald Trump, few in the US or other free and open countries have examined the difficult telecommunications business environment that provided inroads for Chinese companies into their telecommunications infrastructure. While the US sought to provide clarity on excluding Chinese vendors, some small ISPs incorporated their products into their networks anyway. Nor has the business environment improved since then, if one listens to the sector. At the most recent (2023) World Mobile Congress, a major telecommunications conference, Ericsson stated that Europe's network industry structure is 'probably unstainable' because ISPs cannot afford

[31] 'Roadmap to remove high risk vendors from telecoms network', Department for Digital, Culture, Media and Sport (UK), 30/11/2020, https://bit.ly/3rmXRoj (checked: 20/09/2023).
[32] Richard Wray, 'Marconi dealt fatal blow as BT shuts it out of 21st century', *The Guardian*, 29/04/2005, https://bit.ly/3rfzzNh (checked: 20/09/2023).
[33] This included: Huawei, Fujitsu, Alcatel, Siemens, Ericsson, Ciena, Cisco, and Lucent.
[34] 'Foreign involvement in the Critical National Infrastructure: The implications for national security', Intelligence and Security Committee (UK), 13/06/2013, https://bit.ly/438UXks (checked: 20/09/2023).

to build out the networks.[35] In his words: 'The big problem in Europe is really that our customers can simply not afford to build out the networks and I think that is going to hurt European competitiveness long term'.[36] While such claims were once characterised as the ISPs trying to fix the model more in their favour, the fact that large companies are making such predictions should not be ignored by governments who are used to freeriding on the backs of the private sector.

[35] Sam Meredith, 'Telecom giant Ericsson says Europe's industry structure is "probably unsustainable"', *CNBC*, 27/02/2023, https://bit.ly/3rlcHf0 (checked: 20/09/2023).
[36] *Ibid.*

5.0 The future of net neutrality

In the wake of Ofcom's review, it is clear that a strict adherence to a 'pure' net neutrality has broken down in favour of a more flexible and pragmatic approach. This might better prepare ISPs for the extension of 5G and the development of augmented and virtual reality ecosystems such as Metaverse, and OpenNet. This is probably for the best, given the definition of net neutrality has been contested at times, and some would argue the approaches adopted by the US and EU in 2015 and 2016, respectively, were overly strict. As Ofcom has shown in its review, it is possible to provide guardrails against the limiting of free speech and the promotion of favoured companies independently of the costing system. Government regulators can and should monitor how companies apply different payment schemes and different network management approaches, while still applying discriminatory costing systems to bandwidth usage. A regular applications browser should not be treated the same as a high-end taxi firm running a fleet of autonomous vehicles; there is rationality in the system which did in fact exist prior to the imposition of net neutrality rules. That is not to say government regulators should leave ISPs to govern themselves. But they should be allowed to adapt and adjust to new calls on their networks with new economic models which look to those with the most traffic usage and the highest quality performance.

Nor is the UK alone in taking this new pragmatic approach. While the net neutrality principle was incorporated by regulators in the US and the EU in the mid-2000s, there are signs government regulators are beginning to recognise that net neutrality is not simply a case of black or white, and that some grey is necessary for the smooth running of networks, for infrastructure innovation, and for an improved market. For example, in 2017, the FCC voted to loosen rules put in place in 2015, banning cable and telecommunications companies from blocking or slowing down websites or applications. This issue was fed by the global boom in streaming services – Amazon Prime, Netflix, Spotify, and YouTube – which put great pressure on ISPs to maintain traffic. According to European ISPs, the six largest content providers – including companies such as Alphabet (Google), Amazon, Apple, Meta, Microsoft and Netflix – account for more than half of data internet traffic. In February 2023, the EU debate flared up after Thierry Breton,

the European Commissioner for the Internal Market, launched a consultation on the future of the telecommunications sector and its infrastructure. In a keynote speech at the Mobile World Congress, Breton asserted that the current networks were not up to the task of dealing with artificial intelligence-powered connected cars and smart cities.[37]

At the same conference, Timotheus Hottges, Chief Executive of Deutsche Telekom, noted that European telecommunications companies had spent €55 billion (£47 billion) on infrastructure, while the big technology companies had only invested €1 billion (£860 million). Christel Heydemann, Managing Director of Orange UK, asserted that European telecommunications companies are recognised as critical national infrastructure and yet they are expected to bear most of the costs in investing in and maintaining these networks. Heydemann also noted that in a survey, many European telecoms firms doubt they will survive the decade in the current model, a troubling prediction.[38]

5.1 Recommendations

As the future of Britain's network is considered, it is important the industry is bolstered – not with slim government subsidies – but with reasonable adjustments in a net neutrality principle which ought to adjust with the times. Therefore, Ofcom would do well to:

- Allow for ISPs to apply different charges to large users of low-latency data, while ensuring that consumers remain the benchmark for strong services. In simple parlance, charge more to those firms that make up the bulk of data traffic across the network.

- Show full transparency in annual reports on which companies were given discriminatory fees, how much those fees were, and why they were decided. Establish an independent commercial court to settle disputes from firms that disagree with new fee

[37] Foo Yun Chee, 'EU industry chief Breton says not favouring Big Telecoms over Big Tech', *Reuters*, 27/02/2023, https://bit.ly/47sxfTv (checked: 20/09/2023).
[38] Foo Yun Chee, 'EU's Breton plans consultation on Big Tech and telecoms network costs', *Reuters*, 14/02/2023, https://bit.ly/3O1paNT (checked: 20/09/2023).

schedules.

- Consult for ways to find a 'fair share' of the burden of building out new network infrastructure, divided between ISPs, the government, and large content providers, such as the 'Big Tech' firms that dominate data usage across the internet.

- Provide guidance and regulatory oversight to ISPs, prohibiting discriminatory or monopolistic practices which favour their own or favoured applications and content providers.

- Issue guidance and regulatory oversight to ISPs, and create easy-to-use and easy-to-identify labels that safeguard new businesses, start-ups, and innovators from high costs.

- Deliver guidance and regulatory oversight to ISPs, promoting specialised services, for new 5G-enhanced applications such as smart factories, autonomous vehicles, and remote surgery.

- Dispense some protection from market forces for those ISPs which are considered major partners to the government in building, maintaining, and managing critical national infrastructure.

- Establish an independent commission, with members from the public and private sectors – including those from the national security sector – to examine the sector's sustainability and provide impartial advice to HM Government.

- Generate tax incentives and UK funds for public-private partnerships in digital infrastructure research and development so that the backbone of the system is constantly being renewed.

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The Council on Geostrategy is an independent non-profit organisation situated in the heart of Westminster. We focus on an international environment increasingly defined by geopolitical competition and the environmental crisis.

Founded in 2021 as a Company Limited by Guarantee, we aim to shape British strategic ambition in a way that empowers the United Kingdom to succeed and prosper in the twenty-first century. We also look beyond Britain's national borders, with a broad focus on free and open nations in the Euro-Atlantic, the Indo-Pacific, and Polar regions.

Our vision is a united, strong and green Britain, which works with other free and open nations to compete geopolitically and lead the world in overcoming the environmental crisis – for a more secure and prosperous future.

Notes

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