Lesh, Matthew

Working Paper

Expanding the web: The case against net neutrality

IEA Discussion Paper, No. 116

Provided in Cooperation with:
Institute of Economic Affairs (IEA), London

Suggested Citation: Lesh, Matthew (2022) : Expanding the web: The case against net neutrality, IEA Discussion Paper, No. 116, Institute of Economic Affairs (IEA), London

This Version is available at:
https://hdl.handle.net/10419/314016

IEA Discussion Paper No.116

EXPANDING THE WEB

The case against net neutrality

Matthew Lesh
November 2022

iea
Institute of Economic Affairs

IEA papers are designed to promote discussion of economic issues and the role of markets in solving economic and social problems. As with all IEA publications, the views expressed are those of the author and not those of the Institute (which has no corporate view), its managing trustees, Academic Advisory Council, or other senior staff.

Contents

About the author

Matthew Lesh is the Head of Public Policy at the Institute of Economic Affairs.

He often appears on television and radio, is a columnist for London's CityAM newspaper, and a regular writer for dozens of publications including *The Times*, *The Telegraph* and *The Spectator*.

He is also a Fellow of the Adam Smith Institute and Institute of Public Affairs. Matthew graduated with First Class Honours from the University of Melbourne with a Bachelor of Arts (Degree with Honours) and completed a Masters in Public Policy and Administration at the London School of Economics, where he received the Peter Self Prize for Best Overall Result.

Summary

- Net neutrality is the principle that internet service providers (ISPs) should treat all web traffic equally. This means, in general, that ISPs may not block, slow down or speed up the transmission of any content or services. This is meant to promote an 'open internet': allowing users to access all content and services while ensuring low barriers to entry for innovative and new web applications.
- The UK's net neutrality rules derive from the European Union's Open Internet Access Regulation 2015, which came into force in 2016 and has been retained in UK law post-Brexit. These rules mandate net neutrality with exceptions for technical, security and legal requirements.
- Prior to the EU regulation, the UK relied on competition between ISPs, transparency and self-regulation to safeguard an open internet. This arrangement was acknowledged at the time, by the government, Ofcom and independent reviewers, to be effective. Acting of its own accord, the UK is unlikely to have introduced net neutrality regulations independently of the EU.
- Net neutrality rules limit the ability of ISPs to: (1) effectively manage traffic when the network is congested; (2) develop innovative offerings for consumers and emerging technologies; or (3) reach deals with major content providers, such as Netflix, to contribute to network maintenance and expansion in exchange for priority access.
- There is evidence that net neutrality reduces investment in telecommunications infrastructure. In addition to harming consumers, this undermines the government's gigabit broadband and 'levelling up' goals.
- An alternative to net neutrality is net diversity: allowing ISPs to decide how they operate their networks for their customers; enabling greater

experimentation in product offerings and business models; and allowing ISPs to reach deals with large content providers to enable more investment in infrastructure. The possibility of ISPs adopting differing practices would allow for greater competition, innovation and the discovery of the approach most beneficial to consumers.

- Divergence from EU rules is supported by ISPs including BT, Three and Virgin Media/O2 while content providers such as Google, Amazon and Netflix have opposed reform and, in particular, being forced to pay ISPs for access to users.
- Net neutrality advocates object that its abandonment could lead to anticompetitive behaviour by ISPs, such as blocking or slowing content or overcharging for faster access. Ordinary competitive pressures should be expected to prevent such behaviour, and if that fails, it could be controlled by *ex post* competition enforcement by Ofcom and the CMA. There is no requirement for *ex ante* net neutrality regulation.
- Ofcom is reviewing the UK's net neutrality framework in response to growing internet demand, new technologies and congestion-sensitive applications that may justify prioritisation. Although Ofcom has proposed new guidance, the underlying rules are a matter for the government and Parliament.
- Innovation, investment and consumer interest would be served by a substantial abandonment of net neutrality regulations.

Introduction

'Net neutrality' is the idea that internet service providers (ISPs) should be required to treat all web traffic equally, regardless of the identity of the sender or receiver or the type of content.[1] It is often associated with that of an 'open internet', and indeed is said to be essential to it. An open internet is one in which the resources of the internet and the possibility of using it are readily available to anyone.

The alternative to net neutrality, sometimes called 'net diversity', allows for more extensive 'traffic management' by ISPs. Traffic management might mean giving some content priority or slowing down other content to ration bandwidth usage. For example, it might mean slowing down non-time-sensitive traffic, such as file sharing, to ensure the smoother delivery of time-sensitive traffic, such as a voice call, during a busy time. Alternatively, it might mean that ISPs differentiate between types of content, such as by including data from only some applications in customers' data allowances. Or it might mean discriminating between content providers, by allowing priority access to the network in exchange for a fee. Another possibility is that household and business customers might be offered a range of alternative services at different prices so that they could select, for example, fast access to content they find most valuable.

1 There is a separate debate as to whether content providers, such as Google, Amazon, Apple and Meta, should be required to treat all content equally – for example, through a 'common carrier' rule that has previously applied to telephone and railway companies. This particular question is out of the scope of this paper.

The UK's current net neutrality rules arise from the European Union's Internet Access Regulation of 2016, which is enforced by Ofcom.[2] Under these rules, ISPs cannot usually block, prioritise or slow down any content or service.[3] There are exemptions for necessary legal, security or technical purposes. ISPs are also permitted to operate 'specialised services', which use the same infrastructure but do not commit to provide full internet access. However, these rules usually apply only to specific digital television, Voice over Internet Protocol (VoIP) and corporate data services.

In this paper, it is argued that the British experience prior to 2016 shows that net neutrality is not required for the maintenance of an open internet. Furthermore, net neutrality rules damage consumer welfare in various ways, including by restricting consumer choice and removing some significant incentives for investment in internet capacity. In 2022, Ofcom has taken limited steps to move away from the European rules, but a full exploitation of the Brexit opportunity in allowing net diversity will require legislative change.

2 Regulation (EU) 2015/2120, incorporated into UK law under The Open Internet Access (EU Regulation) Regulations 2016. A small number of changes were made to the rules in response to issues related to the UK's withdrawal from the EU. For example, Ofcom is no longer required to follow open internet guidelines published by the Body of European Regulators for Electronic Communications (BEREC) or submit an annual report to the European Commission; see The Open Internet Access (Amendment etc.) (EU Exit) Regulations 2018 or https://assets.publishing.service.gov.uk/media/5bd1ef0340f0b604d37fa7fd/Explanatory_Memorandum_-_OIA_EM.pdf. This gives Ofcom greater flexibility in enforcement, though it will be a matter for the government and Parliament whether the rules are necessary.

3 Article 3(3) of the regulations require ISPs to 'treat all traffic equally, when providing internet access services, without discrimination, restriction or interference, and irrespective of the sender and receiver, the content accessed or distributed, the applications or services used or provided, or the terminal equipment used'. They are, nevertheless, able to undertake 'reasonable traffic management' practices in a transparent, non-discriminatory and proportionate manner. ISPs can also undertake traffic management to comply with the law and preserve network security.

Are net neutrality rules necessary to maintain an open internet in the United Kingdom?

Net neutrality advocates argue an open internet depends on regulation that requires all content and services *to be treated equally*. By contrast, net neutrality opponents rely on competitive pressures among ISPs *to deliver access to all* content and services and thus deliver an open internet – and argue that precisely equal treatment is not always desirable or necessary for an open internet. It is possible, for example, for some time-sensitive content or applications, such as voice calls or live streaming, to be prioritised while not preventing access to other content or services.

The recent experience in the UK, as this section will demonstrate, indicates that regulation is unnecessary to deliver on the principle of open access to the internet.

Regulation or competition?

In a European Commission blog post calling for net neutrality regulations World Wide Web inventor Sir Tim Berners-Lee (2015) wrote that 'net neutrality is critical for the future of the Web and the future of human rights, innovation and progress in Europe'. This sentiment is driven by concern that unregulated ISPs could act in a manner that is detrimental to users' interests and a free and open internet. This could include blocking, slowing or charging extra for certain applications or content for political or business purposes. ISPs, particularly those with market power, could also prioritise their own content or block competing services (such as a mobile operator

blocking VoIP to maximise revenues from phone calls or Sky Broadband prioritising its video service, NOW, and discriminating against Netflix[4]).

This concern, however, has always been largely theoretical – particularly in respect to content censorship. That is, it may have been legally permissible for ISPs to block certain websites, but it has never been a practice in the UK outside of legal requirements. This is likely because ISPs have little incentive to degrade the quality of their service. Nor do ISPs necessarily want to be responsible for content moderation, as this raises challenging questions of discretionary decision making, invites regulatory oversight and risks a backlash from consumers. On the other hand, an EU report that was used to justify net neutrality regulation identified that some European ISPs were limiting, or charging extra for, *services* such as VoIP and peer-to-peer transfers.[5] This was an earlier practice among some ISPs in the UK, although, as discussed below, it was being phased out before the EU regulations were introduced.

A key element of the debate about whether regulation is necessary relates to the extent of competition in the market. The European Commission (2011), in a study prior to the introduction of net neutrality rules, argued that concerns about net neutrality were correlated with the extent of competition in the market. Less competition means a greater risk of ISPs acting in a manner detrimental to consumers, without users having the ability to opt for a different service. This makes for a greater justification for net neutrality regulation. By contrast, because competition incentivises ISPs to meet consumer needs (or face losing customers) and therefore not to restrict access to popular content or services to the detriment of users, it reduces the need for net neutrality regulations.

4 This situation seems particularly unlikely in the UK context. Sky Broadband faces substantially more competition for broadband service than video content service.

5 A BEREC and European Union report in 2012 on traffic management found some ISPs were preventing certain applications such as peer-to-peer (P2P) and VoIP traffic. This was impacting perhaps around 20 per cent of users (BEREC 2012). There was also some limited evidence of other restrictions or prioritisation of such things as gaming, streaming or file downloading. There were also cases of downloads from certain websites being excluded from data caps. The report did not find cases of ISPs blocking individual pieces of controversial content. The report notes that users were required to be informed about traffic management in their contractual agreement.

The open internet principles and the UK's competitive broadband landscape

British policymakers accepted this premise – that net neutrality regulations are unnecessary in a competitive broadband landscape – prior to the EU's regulatory intervention. In 2010, Department for Digital, Culture, Media & Sport (DCMS) Minister Ed Vaizey (2010) outlined the government's approach to net neutrality in a speech entitled 'The Open Internet'. Vaizey stated three guiding principles:

1. Openness: users should *be able to access* all legal content and services;
2. Transparency: traffic management policies should be disclosed; and
3. Innovation: ISPs should be free to manage networks to deliver a quality customer experience.

Vaizey's principles are consistent with the idea of an open internet – that users should have *access* to all legal content and services – but not with strict net neutrality regulations that dictate all these services and content must be treated equally and traffic management must be closely controlled. Vaizey's principles would, for example, allow an ISP to slow down a particular service during periods of congestion to make the network operate more smoothly or to offer a package to consumers that prioritises gaming; with the proviso that the provider is transparent about these practices. The EU regulations prevent such offerings.

Vaizey concluded that competition was sufficient to protect an open internet and that regulatory intervention was not necessary.[6] Similarly, UK digital rights campaigners the Open Rights Group (2010), who later supported net neutrality regulations, stated at the time that competition and choice were protecting an open internet. This point was echoed by the then-chief executive of telecommunications regulator Ofcom, Ed Richards, in comments given to *The Telegraph* (Beaumont 2010):

> In the US, limited competition, both at the network and the ISP level, means that the potential for consumer detriment through traffic management is greater… In Europe, as recent research for

6 Vaizey also left open the development of a 'two sided market where consumers and content providers could choose to pay for differing levels of quality of service', an idea which will be discussed further below.

> the FCC indicates, the mixed model – investment in infrastructure complemented by unbundling of the local loop – has delivered a more competitive market structure from the exchange back into the network.

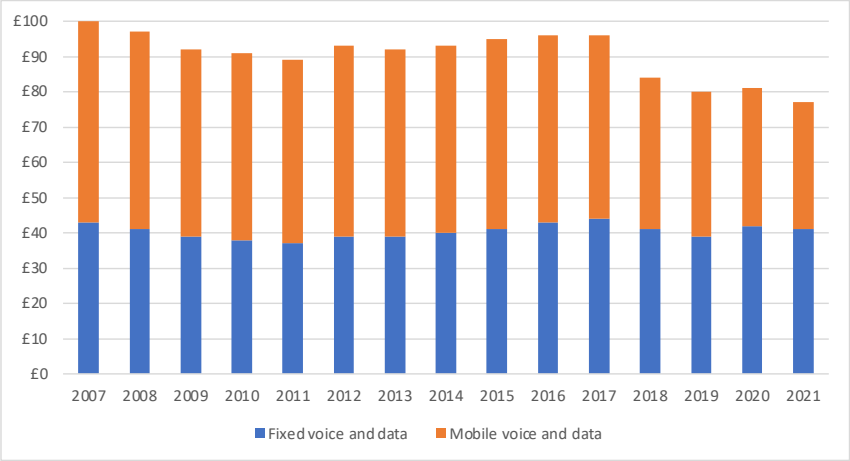
Accordingly, Richards suggests, competitive pressures are sufficient and net neutrality regulation is not necessary.

The 'unbundling of the local loop' cited by Richards refers to the services offered by Openreach, which allow any provider to use the 'last mile' copper network originally built by British Telecom. Since 2010, competition in the broadband market has expanded. The UK has Virgin Media's high speed cable and new full-fibre providers such as Hyperoptic and CityFibre. There are various mobile networks, including 4G and 5G, that also offer mobile and home broadband, and the fast satellite broadband from Starlink and others.

The falling prices for consumers, as quality of service has improved, further demonstrate the strength of competition in the broadband market. Between 2007 and 2021, the average household monthly spending on fixed and mobile telecommunications decreased from £100 to £77 – which, after considering inflation, represents a decline of over half – while data caps and speeds increased (Ofcom 2022).[7] Accordingly, there were and still appear to be sufficient competitive pressures to deliver strong consumer outcomes without net neutrality regulation.

7 The emergence of new broadband and mobile technology also played a big role, though it should be noted that prices have gone down during a period of substantial investment, further indicating a highly competitive market.

Figure 1. Average monthly household spend on telecoms



Source: Ofcom (2022)

Ofcom investigates and the ISPs' voluntary code

Ofcom undertook an investigation into net neutrality in 2010–11. This was in the context of the revised EU communications framework (the EU Electronic Communications Regulatory Framework 2009) and concerns about ISPs slowing down data-intensive services such as BBC iPlayer (Beaumont 2010). The revised EU framework created a presumption in favour of an open internet and strengthened transparency requirements. The framework also gave Ofcom the discretionary power to set a 'minimum quality of service' to prevent the blocking or slowing down of content. Therefore, Ofcom could have introduced a net neutrality requirement but, unlike the later regulations, was not required to enforce net neutrality or prevent any type of traffic management.

Ofcom's (2011) review concluded that the regulator would not exercise the power to enforce net neutrality through 'minimum quality of service' regulations. It would instead continue to 'rely primarily on there being effective competition amongst Internet Service Providers (ISPs)', along with transparency requirements, to deliver open access to the internet (Ofcom 2011, p. 4). Ofcom even accepted that there could be consumer benefits from self-prioritisation (e.g. BT prioritising the BT Vision television service) and blocking (e.g. mobile networks offering plans that block access

to VoIP). It also highlighted the risk of the 'unintended consequences' of intervening in a dynamic market (2011, p. 7).

ISPs subsequently agreed to voluntary, industry guidelines including the Traffic Management Transparency 2011 and the Open Internet Code 2012 (DCMS 2012). These were coordinated by the Broadband Stakeholder Group (BSG), an advisory body funded jointly by industry and the government. The codes, designed to be consistent with the Vaizey principles, committed the ISPs to transparency about traffic management, providing full access to legal products and not targeting negative discrimination against (that is, slowing down or blocking) competitors' content or services. The codes were ultimately applied to around 90 per cent of UK internet users across fixed line and mobile contracts.

In 2015, the BSG commissioned a consultancy firm, WIK, to assess the extent to which the self-regulatory codes were delivering an open internet. The WIK report found that the codes were working effectively: 'almost all UK internet users have virtually full access to the internet', with the only exception being to block unsolicited services such as spam (Waldburger and Arnold 2015, p. 1). 'No signatory to the Codes continuously slows down any traffic on their network. Prioritisation of services and content is equally rare', WIK found. Furthermore, there had not been a single complaint under the procedure established by the codes about negative discrimination. The review observed that 'competitive pressures seem to be working' to prevent ISPs blocking or throttling legal content and/or applications, including those competing with the services provided by the ISPs. The report highlights, as a sign of competition being sufficient to deliver an open internet, mobile operators EE and Vodafone no longer offering packages that restrict VoIP and signing up to the codes in 2014 (BSG 2015).

From all this, it seems most unlikely that acting of its own accord the UK government would have introduced net neutrality regulations. The self-regulatory arrangements and competitive pressures effectively protected an open internet. That is, ISPs were upholding the principles outlined by Vaizey in 2010 in which users were able to access all content and services without censorship while at the same time allowing flexibility in traffic management. The EU's regulations sought to fix a problem that, at the very least in the UK, did not exist.

Furthermore, it is also unlikely that the open internet would be threatened if the UK were to abandon the net neutrality regulations. This is because even the ISPs that are seeking reform of the net neutrality regulations are broadly committed to open internet principles. BT (2021, p. 1), for example, has restated that it believes 'customers should be free to access the content they want, the open internet should remain a viable choice for businesses to launch new services, and telecoms providers should be transparent with customers about how they manage traffic over their networks'.[8] Furthermore, even if BT, or any other ISP, were to change its mind in future, or if customers were unhappy with their traffic management procedures, users would continue to be able to select an alternative ISP (or, as discussed below, there would be remedies in competition law if an egregious case were to arise).

Therefore, net neutrality regulations are unnecessary to maintain an open internet in the UK.

8 BT's submission highlights several issues with the net neutrality regulations due to growth of dominant content providers, new technologies and shifts in customer demand. BT argues that major content providers should contribute to network upkeep and expansion. They also highlight as the challenges posed by new technologies and whether some services (such as hospitals and manufacturing) could justify prioritisation: 'one size-fits-all connectivity isn't fit for the future. Different devices will have different connectivity needs' (p. 8). The submission concludes that Ofcom should rewrite the existing guidelines and reinterpret the legislation to prioritise innovation and consumer welfare.

Do net neutrality rules result in lower quality service for consumers and lower investment broadband infrastructure and prevent experimentation with new products?

The argument against net neutrality regulations – beyond claims that they are unnecessary – is that the prescriptive regulatory intervention undermines innovation and competition, and ultimately harms consumers. This section highlights these challenges and proposes an alternative: net diversity. This principle would allow ISPs to manage traffic in divergent ways, thereby facilitating the development of new technologies such as the metaverse. It could also allow experimentation in differing business models, including packages for broadband customers that prioritise services they consider to be important or ISPs reaching deals with content providers for prioritisation in exchange for revenue to enable more investment in broadband infrastructure.

Net neutrality and the righteousness of equal treatment of content

In September 2021, Ofcom announced a review of the UK's net neutrality framework and of the question as to whether there is a need for new

guidance or approach to compliance.[9] Ofcom's (2021a, pp. 8–9) call for evidence raises questions about whether the current framework is sufficient to address growing internet demand, new technologies and congestion-sensitive applications that may justify prioritisation.

Net neutrality rules have become a more pressing issue in the context of growing internet traffic, which puts significant strains on networks with finite capacity, and thus requires some sort of traffic management. Ofcom (2021b, p. 3) finds that the average data usage for fixed connections grew from 112GB to 453GB between 2015 and 2021. This is driven by the greater use of the internet for high resolution television and on-demand video, gaming and other data-intensive applications. According to the BSG (2021, p. 2), there is growing network stress from 'very occasional' peak traffic (e.g. a World Cup final or a royal wedding combined with a software update download), which requires double the 'regular' peak capacity. By 2030, according to BSG, these very occasional peaks could require four times the regular peak.

ISPs have spare capacity to accommodate peak demand. Nevertheless, it would be uneconomical to provide network capacity that enables maximum speeds for all possible eventualities since it would mean purchasing and maintaining a large amount of expensive and mostly unused equipment, thus making internet connections less affordable for consumers. Therefore, during peak times there is rationing of the service through slower speeds. Net neutrality rules require that all types of traffic equally experience diminished speeds. This equal treatment of all web traffic is not necessarily beneficial for users. Yoo (2005, p. 8) argues 'network neutrality is anything but neutral' because it has a negative impact on some applications that need faster speeds (such as video conferencing or streaming) and a neutral (and therefore comparatively positive) impact on others (such as email or file sharing).

There are further questions about whether it is justified to even try to treat all traffic equally; an issue that is only becoming more relevant in the context of the growing centrality of the internet and new and emerging applications. For example, should emergency and health service traffic be prioritised over other uses (as is the case with road traffic)? Will self-

9 Ofcom is no longer bound by the EU's approach to regulating net neutrality; however, as the law has been retained, it must follow the general principles. The government and Parliament could also go further than the Ofcom consultation envisages by reforming the underlying rules.

driving cars require priority to avoid the risk of hazards and collisions? Will new applications that require high bandwidth and have low latency,[10] such as virtual reality (also known as 'the metaverse'), need prioritisation to function smoothly? If so, would that not justify it?

The net diversity alternative

An alternative approach to net neutrality, proposed by Yoo, is 'network diversity': allowing ISPs to take different approaches to traffic management including discrimination in favour of and against certain services in a way that is beneficial to customers. This would not be unprecedented. Prior to the introduction of the EU's net neutrality rules, Ofcom (2013) noted that ISPs adopted different approaches to traffic management, with some opting for no traffic management during peak periods while others slowed down some services and sped up others. At the time, Ofcom (2013, p. 3) lauded the success of competition, innovation and transparency in providing 'variation and choice' to customers.

This situation changed after the introduction of net neutrality rules. Ofcom was suddenly required to prevent ISPs varying their network management arrangements or offerings to customers. In 2019, Ofcom (2019a) forbade mobile operator O2 compressing video, web and image content, and prioritising video and social media traffic over non-time-critical traffic during network congestion in London. In another case, in 2018, Ofcom (2019b, pp. 18–19) prevented Vodafone from offering an unlimited mobile streaming package with compressed, lower quality video, as it degraded the quality of some web traffic.

In most markets, from airline tickets to grocery shopping, consumers can choose from a multitude of options. This variety is in the consumers' interest as it allows varied preferences to be fulfilled. Yet when it comes to the internet, ISPs must all provide full and indiscriminate access, competing almost entirely on price and speed. Network diversity, by contrast, would allow ISPs to develop new business models, managing traffic in ways that they believe are important for their customers, as in the O2 or Vodafone cases mentioned above, or offering new packages that prioritise certain services or offer differing levels of bandwidth, latency and reliability.

10 Bandwidth refers to how much data is transferred over a given period of time, while latency is the time it takes for a data packet to travel from one point to another.

It is hard to know in advance precisely what product offerings would emerge. Indeed, the central point of net diversity is to enable experimentation. There are, nevertheless, some possibilities that can be envisaged. These include allowing customers to pay extra to prioritise services that are dependent on stable network access, such as those involving gaming or virtual reality. This sort of paid prioritisation could even accelerate the development of new innovative web applications that require a stronger connection to users. According to Barford et al. (2022), in a report from communications industry researchers Enders Analysis, reforming net neutrality rules could 'accelerate the overall development and adoption of the metaverse in the UK'.

Alternatively, some users may want to pay less for internet access in exchange for a reduced level of access to content or services or a connection that is exclusively for a limited set of devices.[11] Kantar Media (2013), a market research firm, found that the core priority for UK customers in selecting a broadband and mobile operator is cost, followed by call, text and data allowances, while just 1 per cent consider traffic management policies.[12] This indicates that at least some British internet users may be open to a lower cost product, for basic internet usage or a smaller number of devices, with more stringent traffic management policies.

This could, as Cave and Crocioni (2007, p. 672) argue, increase consumer welfare:

> When congestion arises, all traffic is delayed irrespective of its value. As this is an economically inefficient outcome, charging more for priority is an efficient way to ration demand and allow highly valued traffic to experience a better quality of service. Even when no congestion existed, discrimination on the basis of difference in consumers' willingness to pay is an efficient way to recover fixed and common costs.

11 Meta offers a Free Basics internet service in developing markets that includes a limited set of websites, such as Facebook, BBC News and Wikipedia, that by 2018 had connected 100 million people to the internet (Constine 2018). In 2011, Ofcom (2011) stated that it remained open minded about ISPs not offering open access to their network, as long as customers had other choices and it did not stifle innovation (point 4.36). It is unlikely that a severely limited internet offering would satisfy UK users and UK ISPs have not expressed an interest in providing such a package. Nevertheless, there is no apparent reason that consumers should be prevented from such a choice were it offered, and there are many other possibilities along similar lines that might be very welcome in the UK market.

12 The lack of interest in traffic management policies may, of course, relate to a lack of consumer knowledge. This could change substantially if there was significant variation in offerings between ISPs.

Net diversity would also allow for more extensive zero-rating offers, that is, offers which do not count certain content or services in a mobile data allowance. Ofcom's (2019b, p. 9) current guidelines allow ISPs to zero-rate a category of content, for example, a range of music streaming services including Spotify *and* Apple Music. However, the offers cannot incentivise the use of a particular application at the expense of others, for example, only zero-rating Spotify and not Apple Music. Additionally, ISPs cannot continue allowing access to content or a service once the user's mobile data cap has been reached. This means, for example, that an ISP cannot continuing offering access to government services, educational material or job search websites for low-income users after their data has run out. Despite these limitations, many ISPs do offer zero-rating packages, such as Vodafone's VOXI, which specifically target younger users by offering unlimited social media and video services in their packages. The existence of VOXI, among others, further demonstrates that consumers could benefit from more varied product offerings from ISPs.

Nevertheless, previous Ofcom enforcement action undermines innovative product offerings that could be beneficial to customers even in the limited case of zero-rating. For example, in 2020–21, during the Covid-19 pandemic, Ofcom investigated BT's zero-rating of some educational resources. BT was allowing continued access for users who had reached their mobile data cap. Ofcom opted not to take action 'due to the limited impact on customers the potential breach of Article 3(3) was likely to have' (2021c, p. 11). The limited impact referred to the relatively small number of websites that were zero-rated and users impacted. Ofcom may have used its discretion to reach a pragmatic conclusion during the pandemic; nevertheless, zero-rating of educational (or other) content including when the user has used up their data allowance appears inconsistent with the rules or Ofcom's previous statements. Thus a practice with clear benefits to some customers, zero-rating content, faces substantial uncertainty.[13]

The challenge in enforcing net neutrality regulation will only grow as web traffic increases and new applications – needing greater regulatory flexibility

13 In September 2021, the Court of Justice of the European Union (CJEU) found that zero-rating is illegal under the EU's net neutrality regulations. This was reflected in new guidelines from the EU regulator, released in June 2022 (BEREC 2022). However, due to Brexit, these new guidelines do not apply to the UK. Nevertheless, this case and new guidance highlight the legal uncertainty faced by ISPs when considering customer offerings that include zero-rating. A change of interpretation from Ofcom could result in the banning of zero-rating.

– emerge. As demonstrated, there are various ways in which consumers prioritise differing styles of service. This diversity of preference will only grow as the internet continues to develop. Possibilities include gaming packages designed to reduce latency, business packages that prioritise video conferencing or a mobile package add-on that provides unlimited video streaming at a reduced quality. None of these would be allowed under the current regulations. Reforming the rules would allow ISPs to better manage traffic on their networks and experiment while providing a more diverse array of products for their customers.

Content providers and infrastructure investment

The peak demand on networks is caused by customer demand for content from a relatively small number of content providers, such as the major streaming and gaming companies. This imposes a large cost to ISPs. BT (2021, p. 4) claims that fewer than twenty content providers are responsible for the 'vast majority of traffic' and 80 per cent of internet traffic can, at times, be driven by just four companies. Layton and Potgieter (2021)the infrastructure requirements to support streaming video entertainment cost significantly more than applications for work, school, and healthcare. These latter applications are socially important, but their total traffic volume is very small compared to streaming video entertainment provided by Netflix, YouTube (Alphabet/Google, in a study of rural ISPs in the United States, found that between 77 per cent and 94 per cent of network costs relate to streaming video entertainment – and that these services are putting significant financial pressures onto these ISPs, to the benefit of large content providers.

However, under current rules, ISPs cannot incentivise content providers to limit their data usage – such as by releasing software updates during non-peak times, using caching and peering services, or multicasting for streaming. The rules require all data to be delivered equally by best efforts. Nor can ISPs require content providers to contribute financially to building the backbone network infrastructure necessary for the delivery of their content. This means that all internet users are effectively subsidising network capacity for a small number of large content providers.

This situation has led to demands, as reported by Gold and McGill (2022), across the US and Europe for 'Big Tech' to contribute more to broadband infrastructure. A South Korean law, introduced in 2020, requires large content providers to ensure they have the network capacity to mitigate

traffic spikes and empowers the government to require content providers to negotiate with ISPs to ensure guaranteed quality of service (Wood, 2020). Amazon, Apple and Facebook have begun to pay a major South Korean ISP, SK Broadband, while there is an ongoing legal battle about whether Netflix must also make a contribution (Lee 2021). There has also been discussion in the European Commission, led by the executive vice-president responsible for digital, Margrethe Vestager, about requiring tech giants to contribute to ISP costs under a 'Sending Party Pays' principle (Chee 2022).

A South Korean-style law, that forces content providers to pay ISPs, would be heavy-handed and difficult to design. The central risk is that it could empower ISPs to demand large and arbitrary payments from content providers, perhaps ultimately decided by a regulator, without any benefit for content providers or users. On the other hand, reforming net neutrality rules could allow the creation of a two-sided market, in which both content providers and consumers contribute to the cost of network infrastructure through mutually beneficial negotiated settlements. In practice, this would mean content providers paying for enhanced network access and faster delivery, perhaps in proportion to their data usage with associated congestion pricing. This would create a two-sided market comparable to newspapers, which are funded by advertisers and readers.

The notion of paying for access to networks has, perhaps unsurprisingly, been opposed by content providers such as Google and Netflix, under the guise of 'open internet' principles. This reflects the commercial conflict in the net neutrality debate – between the content providers that want free access to networks, and ISPs that would like greater freedom to manage their networks and revenue sources. In either case, industry interest should not cloud policy that could benefit consumers.

The evidence indicates that a two-sided market would provide more revenue for ISPs to invest in infrastructure. Bourreau et al. (2015) find, using a theoretical model, that allowing net diversity would result in more investment in broadband capacity. Briglauer et al. (2021, abstract) investigated net neutrality policy and investment in full-fibre broadband across 32 countries in the OECD between 2003 and 2019. They find that 'net neutrality regulations exert a direct negative impact on fiber investments and an indirect negative impact on fiber subscriptions'. Former FCC Chairman Ajit Pai (2017, p. 2) claimed that, following the introduction of net neutrality rules in the US, 'Among our nation's 12 largest internet

service providers domestic broadband capital expenditures decreased by 5.6%, or $3.6 billion, between 2014 and 2016.'

Barford et al. (2022) conclude that 'there are plenty of content providers who could pay extra, and would be willing to if the operators could offer them extra features which make the spend worthwhile (a practice currently forbidden by net neutrality regulations)'. They highlight the potential for e-commerce sites, where even tiny website performance improvements can increase purchases, live sports streaming and e-health and e-finance applications. Barford et al. (2022) also highlight how new applications, such as the metaverse, will also be heavily dependent on network investment. This is not just a matter of speed. That will be provided by new fibre and 5G networks. There are also issues of capacity, reliability and latency that will necessitate large investments in the internet backbone (that is, the wider network interconnections between ISP across cities and countries).

The government's broadband target is for 85 per cent of premises (businesses and homes) to have access to gigabit broadband by 2025. There are benefits from broadband infrastructure investment. The Centre for Economics and Business Research (CEBR 2020) estimated that the full-fibre rollout (also known as Fibre To The Premises or FPTP) could boost productivity by £59 billion by 2025, as well as support job creation and reduce carbon emissions by enabling remote work. Yet there are also significant costs. The National Infrastructure Commission (2018) estimated that building and maintaining a nationwide full-fibre network will cost £33.4 billion over a 30-year period. The Parliament's Public Accounts Committee (2022) warns that the government's goal, downgraded from the original 100 per cent target, is unlikely to be reached. Reforming net neutrality regulations could increase private sector investment, accelerate the rollout of broadband infrastructure and help reach the government's target.

'Fast lanes' and competition law

Net neutrality proponents, such as Berners-Lee (2015), raise concerns that 'fast lanes' for some content would result in discrimination against newer digital services that do not have special arrangements. However, this wrongly presumes all websites currently have equal access to users, or that precisely equal access is necessary for the emergence of new services. The idealised version of the internet, in which every data packet is delivered at equal speeds, has long since passed if it ever truly existed. David Clark, the former chief protocol architect for the internet, called the

notion that all traffic is or ever was treated equally as 'happy little bunny rabbit dreams' (Communications Daily 2009). In practice major content providers such as Google, Amazon, Meta and Netflix have interconnection arrangements (known as 'peering connections' and 'content delivery services') that provide closer connections to users through ISPs (McMillan 2014).[14] Google and Amazon also offer these services to other businesses for a fee, meaning start-ups can also benefit and barriers to new entrants can thereby be reduced. These arrangements benefit users since they provide faster access to major web services. Allowing ISPs to reach deals with the content providers, in exchange for some greater level of access, would simply be taking the same principle one step further.

There are further concerns that the emergence of negotiated settlements could result in competitive bottlenecks: ISPs overcharging content providers, restricting access to some services or prioritising their own services. For example, a vertically integrated company such as Sky, which provides broadband as well as video services (e.g. NOW TV), could prioritise its offerings over competitors (e.g. YouTube, Netflix or Amazon Prime Video). This practice was not observed prior to the introduction of regulation in 2016. But in any case, competition between ISPs should incentivise against blocking popular content or services (as discussed above). ISPs would lose customers if they started actively restricting access to a popular service such as Netflix.

This past experience indicates that ISPs had neither power to restrict competitors' content nor interest in doing so. In 2011, Ofcom (2011, p. 27) stated that, in the context of limited evidence of market power it saw:

> no *prima facie* reason to prevent two-sided markets developing, and ISPs and content and application providers should be free to explore new business models that can result in more efficient investment in networks and services.

It might be argued that there remains a risk that new entrants could be suffocated by traffic management policies before they are able to become popular – customers are unlikely to switch to a new ISP over a service

14 The arrangements are not prevented by the existing net neutrality regulations because ISPs are not actively managing traffic any differently on their networks; it is just that the connection with these services to the ISP is physically closer and thus faster. Netflix, for example, typically hosts content servers within ISPs' network.

they have never heard of getting restricted access to bandwidth. Accordingly, Ofcom went on to say that if competition proved insufficient, it would be possible to use *ex post* powers under the Competition Act to redress anticompetitive behaviour. This would mean Ofcom and the Competition and Markets Authority (CMA), who are concurrently responsible for competition in the communications industry, intervening when there is a demonstratable monopolistic behaviour that has a negative impact on consumers. This oversight should prevent ISPs from restricting access to competitors' content, overcharging a content provider or restricting access to a new service. Therefore, the competition approach could effectively prevent the emergence of anti-consumer practices while providing much more room for the development of innovative business models.

Conclusion

The internet is central to our lives. It's how billions of people communicate, learn, work and are entertained. It is difficult to remember or imagine the world before we had the ability to send instant messages and videos across the globe, and before there was on-demand entertainment and a repository of human knowledge at our fingertips. The web is also central to commerce, from many of the world's biggest technology companies to a multitude of goods and services offered by small businesses. This makes the rules about how the internet is governed of great importance.

The arguments of the proponents of net neutrality have typically focused on worthy goals. But prior to the introduction of the EU's Open Internet Access Regulation in 2016, the UK's competitive broadband and mobile market, along with self-regulation, was sufficient to deliver an open internet. It did this while being more flexible in relation to network management, the development of innovative business models and encouraging further infrastructure investment.

The European Union's rules swept away those arrangements, and now is the time for a return to net diversity. A step has already been taken. In October 2022, Ofcom proposed new net neutrality guidance. The proposed guidance would:

- allow ISPs to provide premium, low-latency retail offerings;
- enable the development of specialised services for 5G and full-fibre networks for virtual reality or driverless vehicles;
- extend the freedom to manage traffic congestion; and
- provide a greater array of zero-rating offers.

On the other hand, Ofcom stated that legislative change would be necessary to:

- allow retail packages in which content is provided at differing quality standards;
- enable traffic management of specific content to address congestion;
- allow zero-rating even after a customer's general data allowance is exhausted; or
- allow ISPs to reach deals with content providers for prioritisation.

A potential legislative reform path would be to return to the situation prior to 2016, in which ISPs were able to manage traffic in a way that would be beneficial to customers, supported by transparency requirements, evolving self-regulation and *ex post* competition enforcement.[15] This would require the repeal of the retained EU law, rather than simply updating guidance.

Net neutrality regulatory reform is a significant Brexit regulatory opportunity. It has the potential to meaningfully improve the technological network fundamental to our lives.

15 The new domestic arrangements would have to be developed in the context of commitments in the EU–UK Trade and Cooperation Agreement (Article 178), which requires the UK to ensure ISPs provide 'non-discriminatory, reasonable, transparent and proportionate network management'. This could likely be achieved by an assumption in favour of an open internet (as was the case prior to 2016), with the proviso that Ofcom or the CMA would only intervene on competition grounds, *ex post*, if there is a clear detriment to users.

Bibliography

Barford, J., Egan, K. and Lindsay, K. (2022) *Net neutrality in the UK: Networks versus content?* Enders Analysis. Available at: https://www.endersanalysis.com/reports/net-neutrality-uk-networks-versus-content (Accessed: 8 November 2022).

Beaumont, C. (2010) Ofcom to examine UK net neutrality. *The Telegraph*, 4 March. Available at: https://www.telegraph.co.uk/technology/broadband/7366583/Ofcom-to-examine-UK-net-neutrality.html (Accessed: 27 May 2022).

BEREC (2012) *BEREC findings on traffic management practices in Europe*. (12) 30. Body of European Regulators for Electronic Communications. Available at: https://berec.europa.eu/eng/document_register/subject_matter/berec/reports/45-berec-findings-on-traffic-management-practices-in-europe (Accessed: 25 May 2022).

BEREC (2022) *Guidelines on the implementation of the Open Internet Regulation*. (22) 81. Body of European Regulators for Electronic Communications. Available at: https://www.berec.europa.eu/en/document-categories/berec/regulatory-best-practices/guidelines/berec-guidelines-on-the-implementation-of-the-open-internet-regulation-0 (Accessed: 12 September 2022).

Berners-Lee, T. (2015) Guest blog: Sir Tim Berners-Lee, founding director, World Wide Web Foundation. *European Commission*, 2 February. Available at: https://web.archive.org/web/20161226190628/http://ec.europa.eu/commission/2014-2019/ansip/blog/guest-blog-sir-tim-berners-lee-founding-director-world-wide-web-foundation_en (Accessed: 30 May 2022).

Bourreau, M., Kourandi, F. and Valletti, T. (2015) Net neutrality with competing internet platforms. *The Journal of Industrial Economics* 63(1): 30–73. Available at: https://doi.org/10.1111/joie.12068.

Briglauer, W. et al. (2021) Net neutrality and high speed broadband networks: evidence from OECD countries. In 23rd Biennial Conference of the International Telecommunications Society (ITS): *Digital societies and industrial transformations: Policies, markets, and technologies in a post-Covid world*, online conference/Gothenburg, Sweden, 21–23 June 2021, ITS, Calgary. Available at: https://www.econstor.eu/handle/10419/238012 (Accessed: 21 April 2022).

BSG (2015) Remaining ISPs commit to the UK's Open Internet Code. 19 January. Broadband Stakeholder Group. Available at: http://www.connectivityuk.org/wp-content/uploads/2015/01/14-01-19-PRESS-RELEASE-All-Major-ISPs-now-OI-Code-Signatories-v5.pdf (Accessed: 8 November 2022).

BSG (2021) *Consultation response form – Broadband Stakeholder Group (BSG)*. London, UK: Ofcom. Available at: https://www.ofcom.org.uk/__data/assets/pdf_file/0024/229524/bsg.pdf (Accessed: 8 November 2022).

BT (2021) *BT response to Ofcom's call for evidence: Net neutrality review*. Ofcom. Available at: https://www.ofcom.org.uk/__data/assets/pdf_file/0025/229525/bt.pdf (Accessed 8 November 2022).

Cave, M. and Crocioni, P. (2007) [Special section on net neutrality] Does Europe need network neutrality rules? *International Journal of Communication* 1(1): 669–79.

CEBR (2020) *Using digital to revive the UK*. Centre for Economics and Business Research. Available at: https://cebr.com/reports/using-digital-to-revive-the-uk-full-fibre-broadband-and-the-growth-of-the-digital-economy-could-create-an-additional-1-2-million-skilled-jobs-by-2025/ (Accessed: 25 May 2022).

Chee, F. Y. (2022) EU's Vestager assessing if tech giants should share telecoms network costs. *Reuters*, 2 May. Available at: https://www.reuters.com/business/media-telecom/eus-vestager-assessing-if-tech-giants-should-share-telecoms-network-costs-2022-05-02/ (Accessed: 25 October 2022).

Communications Daily (2009) Internet architect suggests 'futures market' to avoid policy disputes. *Warren Communications News*, 5 February. Available at: https://slidelegend.com/happy-little-bunny-rabbit-dreams_5a71a7a81723dd83834aefc6.html (Accessed: 21 July 2022).

Constine, J. (2018) Facebook's Internet.org has connected almost 100M to the 'internet'. *TechCrunch*, 25 April. Available at: https://social.techcrunch.com/2018/04/25/internet-org-100-million/ (Accessed: 27 May 2022).

DCMS (2012) ISPs launch open internet code of practice. 30 August. Available at: https://www.gov.uk/government/news/isps-launch-open-internet-code-of-practice (Accessed: 8 November 2022).

European Commission (2011) *The open internet and net neutrality in Europe*. Brussels: European Commission. Available at: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0222:FIN:EN:PDF (Accessed: 8 November 2022).

Gold, A. and McGill, M. H. (2022) New push to make Big Tech pay more for bandwidth. *Axios*, 11 May. Available at: https://www.axios.com/2022/05/11/big-tech-pay-for-bandwidth-eu-south-korea (Accessed: 15 July 2022).

Kantar Media (2013) *Transparency in internet traffic management*. Ofcom. Available at: https://www.ofcom.org.uk/research-and-data/internet-and-on-demand-research/online-copyright-infringement/traffic (Accessed: 8 November 2022).

Layton, R. and Potgieter, P. H. (2021) Rural broadband and the unrecovered cost of streaming video entertainment. Rochester, NY. Available at: https://papers.ssrn.com/abstract=3820644 (Accessed: 12 August 2022).

Lee, J. (2021) S. Korea broadband firm sues Netflix after traffic surge from 'Squid Game'. *Reuters*, 13 October. Available at: https://www.reuters.com/business/media-telecom/skorea-broadband-firm-sues-netflix-after-traffic-surge-squid-game-2021-10-01/ (Accessed: 15 July 2022).

McMillan, R. (2014) What everyone gets wrong in the debate over net neutrality. *Wired*, 23 June. Available at: https://www.wired.com/2014/06/net-neutrality-missing/ (Accessed: 30 May 2022).

National Infrastructure Commission (2018) *National Infrastructure Assessment*. HM Treasury. Available at: https://nic.org.uk/app/uploads/CCS001_CCS0618917350-001_NIC-NIA_Accessible-1.pdf (Accessed: 8 November 2022).

Ofcom (2011) *Ofcom's approach to net neutrality*. Ofcom. Available at: https://www.ofcom.org.uk/__data/assets/pdf_file/0011/50510/statement.pdf (Accessed: 8 November 2022).

Ofcom (2013) *Consumer research into the transparency of traffic management information provided by ISPs*. Ofcom. Available at: https://www.ofcom.org.uk/__data/assets/pdf_file/0021/53913/traffic-research.pdf (Accessed: 8 November 2022).

Ofcom (2019a) *Enforcement programme into internet service providers traffic management practices*. Ofcom. Available at: https://www.ofcom.org.uk/about-ofcom/latest/bulletins/competition-bulletins/all-closed-cases/cw_01210 (Accessed: 15 July 2022).

Ofcom (2019b) *Ofcom's approach to assessing compliance with net neutrality rules*. Ofcom. Available at: https://www.ofcom.org.uk/__data/assets/pdf_file/0014/148100/ofcom-approach-net-neutrality.pdf (Accessed: 8 November 2022).

Ofcom (2021a) *Call for evidence: Net neutrality review*. Ofcom. Available at: https://www.ofcom.org.uk/consultations-and-statements/category-2/call-for-evidence-net-neutrality-review (Accessed: 21 April 2022).

Ofcom (2021b) *Connected Nations 2021*. Ofcom. Available at: ofcom.org.uk/__data/assets/pdf_file/0035/229688/connected-nations-2021-uk.pdf (Accessed: 8 November 2022).

Ofcom (2021c) *Monitoring compliance with the Open Internet Regulation*. Ofcom. Available at: https://www.ofcom.org.uk/__data/assets/pdf_file/0028/227485/Monitoring-compliance-with-the-EU-Open-Internet-Regulation_2021.pdf.

Ofcom (2022) *The Communications Market 2022*. Ofcom. Available at: https://www.ofcom.org.uk/research-and-data/multi-sector-research/cmr/the-communications-market-2022 (Accessed: 21 July 2022).

Open Rights Group (2010) *Net neutrality*. Available at: https://wiki.openrightsgroup.org/wiki/Net_Neutrality (Accessed: 12 August 2022).

Pai, A. (2017) *Chairman Pai speech on the future of internet regulation*. Federal Communications Commission. Available at: https://www.fcc.gov/document/chairman-pai-speech-future-internet-regulation (Accessed: 12 August 2022).

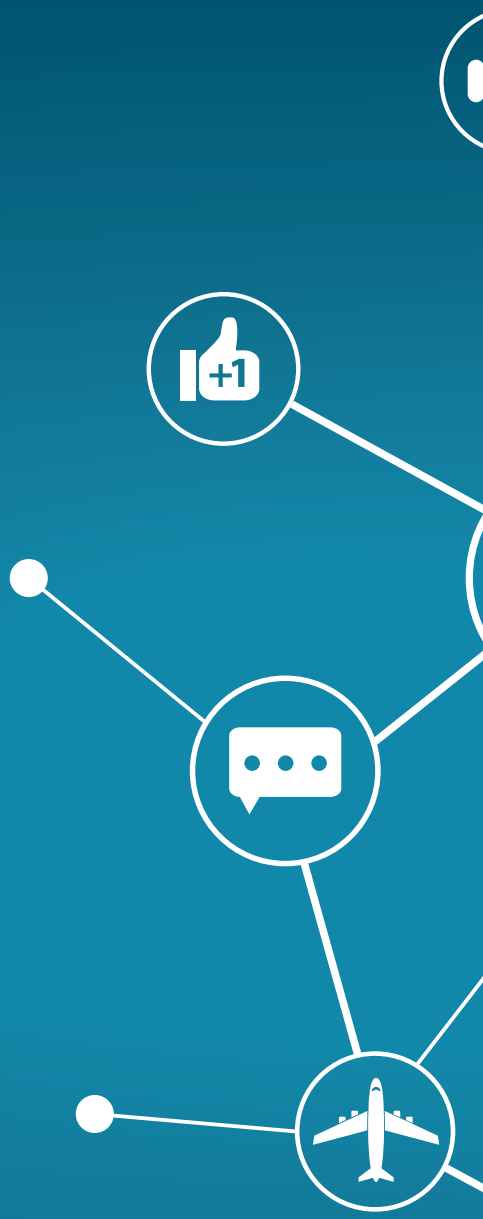
Public Accounts Committee (2022) *Delivering gigabit-capable broadband*. Westminster, UK: House of Commons. Available at: https://publications.parliament.uk/pa/cm5802/cmselect/cmpubacc/743/report.html (Accessed: 21 April 2022).

Vaizey, E. (2010) *The open internet*. GOV.UK. Available at: https://www.gov.uk/government/speeches/the-open-internet (Accessed: 30 May 2022).

Waldburger, M. and Arnold, R. (2015) *Review of the open internet codes*. WIK. Available at: http://www.broadbanduk.org/wp-content/uploads/2015/11/WIK-Review-of-the-Open-Internet-Codes-November-15.pdf (Accessed: 8 November 2022).

Wood, N. (2020) South Korea fleshes out regressive 'Netflix law'. *Telecoms.com*, 8 September. Available at: https://telecoms.com/506381/south-korea-fleshes-out-regressive-netflix-law/ (Accessed: 12 August 2022).

Yoo, C. S. (2005) Beyond network neutrality. *Harvard Journal of Law & Technology* 19(1): 1–77.



The Institute of Economic Affairs
2 Lord North Street
London SW1P 3LB
Tel 020 7799 8900
email iea@iea.org.uk

iea
Institute of
Economic Affairs