Consultation response form

Your response

Question	Your response
Question 1: Functioning of the net neutrality framework **(a) Which aspects of the current net neutrality framework do you consider work well and should be maintained? Please provide details including any supporting evidence and analysis.** **(b) Which aspects, if any, of the current net neutrality framework do you consider work less well and what impact has this had? What, if any, steps to you think could be taken to address this and what impact could this have? Please provide details including the rule or guidance your response relates to and any supporting evidence or analysis.**	**On the success of the UK's net neutrality framework** When assessing the current net neutrality framework, Netflix recommends the approach of "judging a tree by its fruits". Internet development, content and the digital economy in the UK is demonstrably a success story: • The UK has the highest consumption of data per broadband connection in the world[1]. • The UK has the world's second highest penetration of VOD services[2]. ○ Relatedly, some of Netflix' most successful and award-winning shows such as *The Crown* and *Sex Education* have recently been produced in the UK. Netflix now invests over $1bn a year on UK-originated content. • The UK is home to a very flourishing start-up culture and more than 100 tech "unicorns", according to figures from Tech Nation[3]. During the pandemic many essential services, business and entertainment have shifted online. Despite there being no precedent for this, the UK's Internet has proved highly resilient[4] throughout, as Ofcom's own analysis attests.

[1] http://www.commcham.com/pubs/2021/10/5/patterns-of-internet-traffic-growth-2021.html
[2] https://rm.coe.int/trends-in-the-vod-market-in-eu28-final-version/1680a1511a
[3] https://technation.io/news/uk-tech-scaleups-must-decide-on-their-future-impact-after-astonishing-vc-growth-in-2021/
[4] See Ofcom's own assessment here: https://www.ofcom.org.uk/about-ofcom/latest/media/media-releases/2020/broadband-networks-during-pandemic

	By all these measures, the UK's success shows that the current framework is not only fit for purpose, but working well. Strong net neutrality rules allow end-users to choose the services they want to use online, instead of being constrained by the limitations of a gatekeeper in between. Net neutrality rules protect all online businesses, like the next Netflix, from having to pay a toll or work out complex arrangements to reach their potential customers or audience. This enables content providers to invest in creating high-quality content and services, and ISPs to focus on building and selling connectivity. Lastly these rules facilitate fruitful cooperation between content providers and ISPs - a partnership best illustrated by a quote from BT's CTO Howard Watson "*The UK is one of the world's most advanced digital economies, so we overbuild our networks to compensate for our love of high-definition streaming content, video gaming and other bandwidth-hungry applications*."[5]. Any change in the framework should be exercised with extreme caution and great consideration for the risks. We will cover the risks associated with specialised services and interconnection in questions 2 and 3 respectively, and the risks associated with zero-rating below. **On zero-rating** Zero-rating is a practice by which certain content is made available without counting against a data cap. In its 2019 'approach to assessing compliance with net neutrality rules'[6] Ofcom identifies some of the risks associated with zero-rating: the ability to limit and/or exclude end-users' access to certain content/applications, the ability to influence end-users' exercise of rights, or to materially reduce end-users' choice. This is particularly evident for "data hungry" (video) applications that might be zero-rated against comparatively low data caps. To mitigate these risks, zero-rating plans can ensure they are non-discriminatory by following certain requirements: (1) Open to all applications of a similar class (e.g. all video); (2) without

[5] https://newsroom.bt.com/the-facts-about-our-network-and-coronavirus/

[6] https://www.ofcom.org.uk/__data/assets/pdf_file/0014/148100/ofcom-approach-net-neutrality.pdf

	charge to the content provider; and (3) without technical barriers that make it difficult for smaller applications to participate. Discriminatory zero-rating plans, those which would allow certain traffic to be exempt from certain data caps, can be harmful to competition by encouraging consumers to prefer some services over others or limiting access altogether. Before the net neutrality rules were enforced in 2015 across the EU, mobile operators that zero-rated selected video services had data-caps half the size of operators that did not.[7] The risk is further compounded when ISPs attempt to charge content providers for zero-rating their content, or ISPs favour dominant or their own vertically integrated content providers at the expense of new entrants. For example, a Dutch ISP doubled the size of its data-caps in 2016 after it launched an internet television service as it was unable to zero-rate its own video service under Dutch net neutrality rules.[8] If that ISP had been allowed to zero-rate its own service, then the ability for end-users to choose between the affiliated service and other online services would have been diminished. The case-by-case review of zero-rating offers appears to be successfully balancing the benefits of zero-rating programs with these potential risks. Since 2016, Ofcom has concluded reviews of six zero-rating offers and in 2017, Ofcom launched an enforcement programme into Internet Service Providers' traffic management practices[9]. In each case, Ofcom either concluded the market impact of the practice was low (suggesting there is little demand for such practices from internet users) or secured assurances from ISPs. This suggests that there are no grounds to relax the open internet rules in the UK.

[7] "Mobile operators that zero-rate video in EU28 markets sell half as much gigabyte volume for €35 than mobile operators that do not." *The state of 4G pricing – 1st half 2016*, Rewheel / Digital Fuel Monitor. http://dfmonitor.eu/downloads/1H2016_DFMonitor_fifth_release_11052016.pdf

[8] "KPN doubled the mobile internet volume cap from 5 to 10 Gigabytes between November 2014 and February 2015 while keeping the price the same at €37.50 a month! Compared with January 2014, KPN offers now 5 times higher volume (10 Gigabytes versus 2) for a lower price." *In the Netherlands, where zero-rating is banned, KPN just doubled (free of charge) the mobile internet volume caps to encourage a carefree usage of its online videos*, Rewheel / Digital Fuel Monitor. http://dfmonitor.eu/downloads/Banning_zerorating_leads_to_higher_volume_caps_06022015.pdf

[9] https://www.ofcom.org.uk/about-ofcom/latest/bulletins/competition-bulletins/all-closed-cases/cw_01210

Question 2: Use cases, technologies, and other market developments **(a) What, if any, specific current or future use cases, technologies or other market developments have raised, or may raise, particular concerns or issues under the net neutrality framework?** **(b) What, if any, steps do you think could be taken to address these concerns or issues and what impact could this have? Please provide details of the use case, technology or market development and the rule or guidance your response relates to, as well as any supporting evidence and analysis.**	**The transition to online entertainment and Netflix investments to enable video streaming** There will continue to be a shift of video and entertainment consumption online. We see a mutually beneficial relationship between content and connectivity providers. Content providers like Netflix invest in content for members to enjoy (including UK content that brings joy to our UK members), and customers subscribe to an internet service to access any content that they like. What's more, we observe that internet users that are customers of subscription VoD services are more likely to subscribe to higher broadband speeds or next-generation networks, facilitating further investments in these technologies. Netflix has invested in its own content delivery network, Open Connect, which localises content close to users in order to support ISPs in efficiently delivering Netflix content. Open Connect is made up of about 17,000 servers located in 158 countries, split between open interconnect locations in multi-tenant datacentre facilities and dedicated appliances embedded in ISP networks, and provided to those ISPs free of charge. An ISP that hosts embedded Open Connect Appliances will serve on average more than 95% of Netflix content locally without the need to carry it over long distance interconnects. This saves network costs and reduces the risk of congestion of internet traffic, easing the burden on the ISP's infrastructure. Open Connect also takes a dynamic approach by uploading content for members during off-peak hours, meaning we ensure content is delivered to members when the network is empty and it isn't costly for internet providers. In these ways our technology is aimed at helping connectivity providers optimise their networks and deliver the best experience to users. Indeed in 2018, BT estimated that having content deeper in the network offloads 60% of core capacity, helping achieve significant unit cost reductions over time[10]. **On specialised services** It is sometimes argued that there may be unforeseen technological developments that might require "dedicated" networks. Common examples are cited by Ofcom - autonomous vehicles, e-medicine etc. allegedly requiring dedicated networks and low latency. These are not mass-market

[10] BT "Dollars less - bandwidth more" - s7-9 https://indico.uknof.org.uk/event/42/contributions/555/attachments/752/924/UKNOF40-MCRAE-WEBSITE.pdf

	applications of internet technologies. Overall, Netflix is highly sceptical of the value of specialised services that are incorporated into retail internet access services, and we have not seen a compelling example of one. Therefore, it is encouraged that specialised services are evaluated *ex-ante* to ensure they are necessary, non-discriminatory, and do not impede on end-user rights. A few years ago, it could have been argued that delivering high-definition video or 4K over the internet would require specialised services. Today it is clear that not only is it possible to deliver both of those formats over the internet, but that doing so unlocks innovation and diversity to a degree that would have been difficult to imagine ten years ago. If industry and regulators had taken a different path towards specialised services, it is unlikely that the same cycle of innovation, demand, and investment would have occurred. Similarly, the Internet might not have been as prepared to carry the traffic levels needed for working and schooling from home during the periods of lockdown required by Covid. Strong net neutrality rules should require high levels of scrutiny over specialised services, and explicitly state that once an application delivered over the internet has been shown to be technically and commercially successful, then that application should not be a candidate for a specialised service. This would include, at minimum, video-on-demand services.
Question 3: Value chain **Are there particular business models or aspects of the internet or other value chains that you think we should consider as part of our review? Please explain why, providing details including any supporting evidence or analysis.**	**On interconnection practices as a risk for network neutrality and end-user rights** Ofcom's recognition that interconnection may "have the effect of limiting the exercise of end-user rights" highlights the importance of ensuring the framework is effective when implemented. All content requested from the internet must pass through an interconnection point before reaching the end-user, and ISPs have sole control of these access points and where and how content traverses across their networks. Customers subscribe to an internet access service from an ISP in order to be able to connect to the *entire* internet. ISPs have a duty to their customers to enable global connectivity, and do so

	through a mix of transit and peering. This requirement of global connectivity creates a mutual incentive for ISPs and content providers to interconnect directly and to localise traffic as much as possible. When an ISP has a mix of uncongested peerings and transit with 'Transit ISPs' (ISPs who provide IP Transit services to third parties), content providers that cannot interconnect directly (because of distance for example) will be able to exchange traffic without degradation through Transit ISPs. The ISP and/or the content provider will then pay a competitive fee reflecting the provision of a transit service[11]. We recommend Ofcom continues to pay close attention to the role of Transit ISPs in delivering an open internet. Netflix, through its investment in Open Connect, has worked cooperatively with ISPs in the UK to connect directly. Open Connect servers are located in more than 150 locations in the UK, and 89% of Netflix traffic is offloaded to local Open Connect Appliances embedded in ISPs networks. As a consequence, UK ISPs' long haul networks and interconnects are mostly free of Netflix traffic and less likely to face congestion during times of peak demand for Netflix content from their customers. **On the risk of network fees and perverse incentives** Netflix has observed some ISPs use their position over access to customers in order to extract network fees from content providers[12] instead of working together to provide the best quality of service under a more cooperative approach. These fees serve no purpose other than providing a

[11] Video services like Netflix can work very well going through multiple network "hops" so long as networks are uncongested. Video is not latency sensitive and congestion is the main issue causing video quality degradation or buffering.

[12] "The Commission's investigation confirmed that, ultimately, each of the routes that OTT providers can use to interconnect with the Parties' internet networks, thereby obtaining access to the Parties' broadband customers, are under the control of the Parties." *COMP/M.7000 - Liberty Global/Ziggo.* para. 369.

	rent for the ISP, as ISPs have little incentive to use revenues from interconnection fees to build out network capacity or reduce rates for end-users[13]. In fact, seeking network payments will lead to perverse incentives for the ISPs as the only way to force a content provider to pay is to ensure the congestion of all alternative routes (through Transit ISPs) into the ISP's network. Such restrictive interconnection practices have two consequences. First, customers of the ISP will receive poor performance on any content or service not directly connected to the ISP, despite paying for access to the *entire* internet, and second, the only alternative for a content provider will be to either pay a termination fee or suffer congestion and quality degradation. Refusing to upgrade interconnection capacity, and therefore limiting an end-user's ability to access certain content, is contrary to the end-user protections under Article 3(1) and the equal treatment requirement under Article 3(3). It is essential that Ofcom remain vigilant on such possible practices, and explicitly seek to identify and combat them.
Question 4: International cases studies **Are there any international case studies or approaches to net neutrality that you think we could usefully consider? Please include details of any analysis or assessments.**	Stable regulation and a competitive environment are fertile ground for investment. Since the term was coined in 2003, there have been multiple precedents of net neutrality laws, regulation and enforcement. Examples worthy of consideration by Ofcom are: • In 2018 in the United States, shortly after the FCC repealed its net neutrality rules from 2015, 11 states including the state of California adopted a law on Net Neutrality, including clarity around discriminatory zero-rating and behaviours at points of interconnection that

[13] "One might attempt to rehabilitate the argument [...] by noting that in a two-sided market the expectation would be that higher interconnection fees would lead to lower prices for subscribers, which would raise consumer welfare. We dismiss this second contention by noting that it is implausible that any increase in interconnection revenues [...] would be fully passed through to subscribers[.]" *Applications of Charter Communications, Inc., Time Warner Cable Inc., and Advance/Newhouse Partnership For Consent to Assign or Transfer Control of Licenses and Authorizations*, FCC-16-59, footnote 390.

would amount to a circumvention of the net neutrality rules. California is home to some of the world's most successful technology and entertainment companies. Ofcom should note that US ISPs' objections to the 2015 rules were not with the principles of net neutrality, but with a regulatory issue not present in the UK: the reclassification of broadband internet access as a common carriage service. There is widespread support, including among ISPs, for a stable net neutrality regime in the US.

- India approved regulations supporting net neutrality between 2016 and 2018 and received widespread public support for this progressive move. The regulatory framework in India prohibits discriminatory pricing/ zero-rating of services. India is widely recognised as one of the largest and fastest growing digital economies[14], and the telecoms sector continued to flourish after the rules were established. Between 2015 and 2020, average internet data consumption grew 16 times[15], an average of 76% per year, and foreign direct investments in telecoms equities in India grew 3 times during 2017-2020 compared to 2013-2016[16].
- The European Union adopted a regulation setting the framework for net neutrality in 2015. This is the same framework that successfully governs the UK today. The close proximity of internet hubs such as Frankfurt, London, Amsterdam and Paris, as well the existence of telecommunications groups with subsidiaries in both the EU and UK, requires a consistent approach to net neutrality rules.
- Korea provides an example of how encouraging payments from content providers can have a perverse impact. In 2016, Korea began to mandate a "Sending Party Network Pays" model between the three Korean "Tier 1" ISPs. This practice entrenches competitive positions and contradicts the basic principles of "bill and keep" on which the internet is based around the world[17]. As a result, internet IP transit prices in Korea are significantly

[14] https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/digital-india-technology-to-transform-a-connected-nation

[15] Page 3 https://www.nokia.com/sites/default/files/2021-02/Nokia-MBiT-2021.pdf

[16] According to surveys by the Department for Promotion of Industry and Internal Trade aggregated by Statista https://www.statista.com/statistics/711549/india-fdi-equity-inflow-amount-for-telecommunications-sector/#statisticContainer

[17] http://oecdinsights.org/2012/10/22/internet-traffic-exchange-2-billion-users-and-its-done-on-a-handshake/

	higher[1819] than in comparable markets like Singapore or Tokyo, an order of magnitude greater than the main European or US internet hubs which as a consequence affects the investment decisions of internet content providers. For instance, the latest subsea cable projects such as Google's 'Apricot', 'Echo' and Facebook's 'Echo' and 'Bitfrost' do not land in Korea[20].
Question 5: Guidance and approach to compliance and enforcement **Are there specific challenges with the existing guidance that we should be aware of (e.g. ambiguity, gaps)? Assuming the rules stay broadly the same, which areas could Ofcom usefully provide additional clarity or guidance on? Please provide details.**	Netflix considers it helpful that Ofcom have been documenting their approach and case assessment clearly, both to help cement case law and in order that stakeholders can anticipate future assessment of their practices.
Question 6: Annual report **Do you find Ofcom's annual monitoring report useful or are there any changes you think we could usefully make either to the content or how we communicate this?**	Netflix welcomes Ofcom's annual report and future opportunities for collaboration.

[18] https://carnegieendowment.org/2021/08/17/afterword-korea-s-challenge-to-standard-internet-interconnection-model-pub-85166

[19] TeleGeography's annual bandwidth pricing review from 2021, especially slide 17, available here: https://blog.telegeography.com/2021-global-pricing-trends-in-20-minutes

[20] https://cloud.google.com/blog/products/infrastructure/new-apricot-subsea-cable-brings-more-connectivity-to-asia; https://engineering.fb.com/2021/03/28/connectivity/echo-bifrost/

Question 7: Other **Is there any other evidence or analysis that you are aware of and/or could provide to aid our review?**	N/A