Consultation response form

Please complete this form in full and return to netneutrality2021@ofcom.org.uk.

Consultation title	Net neutrality review
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Confidentiality

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Your response

Overall

Question	Your response
Overview of Google's response	Confidential? – N Google welcomes the opportunity to further engage with Ofcom's review of the

	Net Neutrality framework following the 2021 Call for Evidence. We welcome Ofcom's continued drive to foster innovation and consumer benefits. We support the objective of encouraging more innovation in network access whilst maintaining the open nature of the Internet and the UK's thriving digital ecosystem. Therefore, we welcome Ofcom's initial conclusion that there is no need to introduce a forced charging regime for interconnection. However, there are some points around specialised services and zero-rating where further clarity in the guidance would help guarantee market certainty and consumer fairness. We should not shy away from the ambition of a rich and diverse choice of online applications and services that can be freely accessed by users, supported by capacious network infrastructure. There is a virtuous cycle that exists in the online content space, which ultimately depends on consumers who buy high-speed Internet access from telecom operators (as 'Internet Service Providers' - ISPs) to reach content and applications. Similarly, content providers are themselves reliant on a connected population for their business to work. This has delivered huge advantages to consumers and users who benefit from unfettered access to a rich library of online content, applications and services, bringing socio-economic benefits and access to entertainment and information that enriches consumers' lives. Market demands from consumers encourage innovation, and changes to the net neutrality framework should be made

	with the potential impact on research and development in mind. In its consultation Ofcom states that the 'Internet value chain is complex and has changed significantly since the net neutrality rules were introduced' (Para 3.2). It would be useful to have further engagement with Ofcom to understand the evidence base for this statement. Our view is that since before 2015 when the rules were introduced, and still today, there continues to exist a symbiotic relationship between Content and Application providers (CAPs) and telecom operators that benefits both parties and end users. To put it another way: consumer demand for online products and services drives demand for Internet connections. In addition to this fundamental symbiotic relationship, this also creates natural incentives for CAPs and telecom operators to enter into commercial partnerships to raise revenue, invest in technology solutions and increase the efficiency of networks and the experience of our joint users. Google has a long track record of such partnerships with the telecom sector. Recent examples include: • BT and Google work closely together on a range of initiatives, including joint digital skills training, as well as a flagship multi-year partnership between BT Sport and YouTube on the UEFA Champions League, including live streaming the final in 4K 60fps on YouTube for the first time in 2021. • Google Cloud is Vodafone's data analytics partner of choice, as publicly announced in May 2021, and Vodafone recently confirmed

	publicly the business benefits of that partnership. On the consumer side, Vodafone is a significant partner for our Pixel range of phones, and also works with us on joint infrastructure investments including submarine cables. • We have a wide range of partnerships with Orange, including a joint 5G/Edge innovation centre in Paris together with Google Cloud, joint infrastructure investments including the Dunant transatlantic submarine cable, consumer partnerships with Android, and Android TV. • And we have also recently started a partnership with Deutsche Telekom on network transformation including 5G. These examples are illustrative of a very dynamic and mutually beneficial set of relationships, which bodes well for the future of all of us in the ICT ecosystem. It is this kind of symbiotic relationship that Ofcom should strive to foster, for the benefit of all actors in the ecosystem, starting with end-users. Net neutrality rules should be seen as a foundational safeguard for this virtuous cycle of innovation that reflects consumer needs and demand. Regulators should therefore seek to guarantee assurances and clarity for how such a regime can avoid discriminatory practices, and ensure that flexible and dynamic guidelines remain relevant for industry. Google supports the recognition of CAPs as users, rather than generators of traffic, and the recognition that a number of CAPs are actively investing in infrastructure,

	technologies and methods to improve the efficiency of traffic delivery. One of many examples is the Grace Hopper subsea cable which links the US with the UK, improving network diversity and resilience. But we believe there are some proposals that need further consideration and guidance. While zero-rating may be acceptable in certain circumstances, it must be implemented in a manner that treats all traffic and providers fairly. In our view, a truly satisfactory long term situation remains one where everyone benefits from an evolving and capacious Internet infrastructure, that would not need or require zero-rating offers or the tiers that Ofcom suggests, as all services would be easily and affordably accessed by consumers, users and citizens. We detail our perspective concerning zero rating in response to questions 1-4 below. Likewise, the risks of introducing differentiated and more complicated retail packages on a consumer's ability to navigate the market should be rigorously tested. Efforts should be made to ensure that all options are accessible to users and the changes are clearly communicated. It would also help market stability if Ofcom were to require guarantees that specialised services be implemented without threatening the non-discriminatory treatment of traffic or hindering consumers from enjoying a diverse online experience over the public Internet. We believe that a risk-based approach should be taken and communicated in order to allow specialised services and bespoke QoS offerings, that will prevent bifurcation of the Internet, and consider future use cases and investments; and consumer prices. We detail these suggestions in response to Question 12.

	On proposals related to traffic management, we agree that risks of congestion need to be addressed, but note that technological developments and industry-wide efforts are facilitating improvements in this space. At Google, we design our services and invest in products that minimise traffic load, support operators' effective network management and reduce costs. We work with ISPs to manage traffic and bring content closer to their consumers. We also respond to concerns around network congestion. For example, we optimise YouTube videos to make sure they fit a user's bandwidth and device capabilities - we do not send 4K all the time as some may think. Our objective is smooth video playback and the best overall user experience. Overall, we believe that Internet performance in the face of recent external shocks demonstrates that our networks are already resilient. Overall, we want to reaffirm the basic neutral traffic management principles: i.e. any traffic management should be in place for purely technical reasons, deployed only in a time limited manner, and in a way that does not unduly disadvantage certain types of services. We detail our perspective on traffic management in response to questions 5-10 below. We appreciate the consideration given to the arguments we presented in our response to the Call for Evidence, and recognition of the need for a proportionate and balanced approach that can ensure minimal disruption to the UK's thriving digital ecosystem. Ofcom's approach is encouraging and we look forward to engaging in further discussions on the details of the UK's future Net Neutrality

	framework. Our general view is that the UK's net neutrality framework is working well, and we strongly recommend that Ofcom assess the risk of adding complexity to the market. Furthermore, untested interventions could undermine stability in the market and have adverse consequences for British consumers and business. Our response to the specific questions Ofcom raised in the consultation are included below. Given Ofcom's intention to provide further clarity in some areas, we have chosen not to respond to each individual question at this stage. We consider it would be better suited for us to comment and respond once Ofcom has had the opportunity to provide more clarity.

Zero-rating

Question	Your response
Question 1: Do you agree with our assessment of zero-rating offers and our proposed approach?	Confidential? – N In principle, our view is that zero-rating may be acceptable in certain circumstances as long as it is implemented in a manner that treats all traffic and providers fairly. Therefore, to provide market certainty and ensure a level playing field, Ofcom could consider publishing guidance that specifies certain rules or principles, such as a requirement to ensure that technically similar traffic should be treated similarly on the public Internet. We

	agree that a case-by-case approach is preferable and proportionate. As part of this approach, Ofcom should also consider regularly monitoring ISP behaviour to ensure compliance. One possible concern with zero-rating of selective content is that it has the risk of misleading consumers. For example, embedded within Government or health-related web pages (Ofcom's "type one" zero-rating offers) may be content from third parties, for example from a video platform, that may not be zero rated, because the entire video platform itself is not zero rated. Therefore consumers who are particularly vulnerable to data consumption shocks may find that content that they assumed was zero rated, is in fact not. A possible alternative approach could be to use social tariffs or "free data" allowances as an alternative to support such activities.
Question 2: Do you agree with the criteria we use to define Type One, Type Two and Type Three zero-rating offers and our proposed approach to such offers?	-
Question 3: Do you agree with the approach in our guidance in Annex 5 in relation to zero-rating?	Google agrees that Ofcom's interventions should be made on a case-by-case basis in limited circumstances. Clarity in certain situations will be helpful to the operation of the net neutrality framework in the UK while promoting a pro-innovation and competition environment that takes a proportionate approach to regulation. On top of needing to be demonstrably necessary compared to the normal provision of 'best efforts open Internet', zero-rating programmes should be fully transparent to the ISP's customers and open to all content or application providers

	in the relevant technical category. Given Ofcom's intention to provide further clarity on this issue, we consider it would be inappropriate to provide further comments at this stage.
Question 4: What are your views on whether zero-rated content should be able to be accessed once a customer's data allowance has been used up?	-
Please provide any further evidence you have to support your responses.	

Traffic management

Question	Your response
Question 5: Do you agree with our assessment of retail offers with different quality levels and our proposed approach?	Confidential? – N Google is supportive of Ofcom's objective to encourage innovation across the value chain, including at the network layer and we welcome Ofcom's acknowledgement that CAPs and ISPs have worked together on traffic management issues. We strongly believe that it is in the interest of all parties to ensure a good user experience, as relevant to their respective know-how and roles in the value chain. However, we have concerns around proposals allowing ISPs to offer 'innovative' retail packages and specialised services. We believe that the proposals could benefit from further clarity to ensure that there are limited unintended consequences. We have previously expressed that a risk to innovation in the value chain would be posed by ISPs erecting barriers to market entry through blocking, throttling and paid prioritisation and other discriminatory measures. This presents a challenge in particular for smaller platforms who cannot afford to fast-lane their applications, undermining investment in new areas and

	user choice and the diversity afforded by the open character of the Internet.
Question 6: Do you agree with the approach in our guidance in Annex 5 in relation to differentiated retail offers, including transparency requirements, improved regulatory monitoring and reporting of retail offers with different quality levels as well as the general quality of the internet access services?	In principle, we do not see an issue with operators offering retail Internet access offers with different quality levels for all traffic over the connection. These seem to be possible to deliver already, for example Vodafone UK offers three different unlimited 5G packages, with maximum throughput bandwidths of 2Mbps, 10Mbps, and "line speed". However, attempting to differentiate retail offers on anything other than throughput (for example offerings based on jitter, latency, priority over other Internet connections), may be problematic in terms of consumer comprehension of what they are buying. Ofcom's own research indicates that customer engagement is an important metric for ensuring they have the resources to identify the best packages.[1] However, by allowing ISPs to offer different 'tiers' of internet, it can become more difficult for end users to determine which package is most suitable for their needs. In particular, Ofcom notes in Para 4.17 that "as Internet services become more sophisticated over time, we expect that ISPs will continue to have a strong information advantage over consumers" and that this may "undermine consumer choice". (Para 4.18). This problem would be particularly acute for vulnerable consumers, at a time of increased pressure on utility bills. If such services are to be offered, we consider that it would be important and

[1] https://www.ofcom.org.uk/__data/assets/pdf_file/0029/248546/pricing-trends-in-UK-Communications-services-report.pdf

	sensible for Ofcom to demand increased transparency from ISPs to improve consumer outcomes. We would also encourage Ofcom to publish regular transparency reports on network performance and network management by ISPs. This will help consumers better understand what is going on and would allow the identification of any emerging issues that the broader industry needs to tackle.
Question 7: What are your views on a more permissive approach towards retail offers where different quality levels are content and service specific?	We recommend that Ofcom assess the risk of introducing different retail offers as this would add complexity to the market, reiterating our above concern that consumers lack the ability to effectively navigate their purchasing power. Furthermore, untested interventions could undermine stability in the market and have adverse consequences for consumers and business. We believe that users should be in control of their Internet connection. For example, if a user chooses that they want to prioritise an application (any application) over their other Internet traffic, user control of how they configure their Internet connection does not in principle seem to be problematic. However, retail offerings where the set of applications or traffic that can be prioritised is selected, controlled, and potentially paid for by a third party could risk segmenting the Open Internet and risking innovation and new services. Therefore, we believe it is counterproductive to introduce more expensive, differentiated quality retail offerings for specific content or services. We are not aware of any consumer content or application that has sought a “fast lane” for their service on operators’ networks,

	the latest content and applications function fully on an Open Internet connection. Furthermore, any segmentation would need to be considered in light of the risks of undermining the public policy aim of affordable, open Internet access that is key to the UK's economic recovery and digital transformation. For consumer services we believe the Open Internet remains the best way to deliver the vast variety of services that consumers have become used to accessing over their Internet connections. Finally, to drive the policy goal of takeup of 5G and FTTH connections, we need to find new Internet applications that need the high bandwidth, low latency internet connections that these technologies provide - limiting such applications to a operator-provided segmented private "fast lane" only available for a premium price will hinder development and adoption of such applications that will drive demand for services like 5G and FTTH.
Question 8: Do you agree with our assessment of how traffic management can be used to address congestion and our proposed approach?	It would be useful to have a more detailed understanding of the methodology Ofcom used to measure congestion and identify the demand for particular CAPs services that may be related to this, particularly the traffic demanded by users from the so-called 'big tech companies' (Para 3.14 and others). We feel that this terminology does not effectively capture the wide variety of other major players in the UK such as broadcasters like the BBC, and other VOD platforms, who are increasingly making their content widely available through the Internet. We do not feel it relevant to note the business models of different CAPs in the context of possible network congestion (Para 3.16).

	We note that Sky and Virgin are bringing Internet Protocol TV (IPTV) devices for their subscription TV services to the market that will only increase traffic, if taken up by consumers. Given that these organisations are both ISPs and content providers, the launch of such products seem to suggest confidence in networks' (in particular their own networks') ability to handle such traffic. In order to provide our informed assessment, it would be useful to understand why some companies and sectors are identified as potentially causing congestion while others are not mentioned, and how the traffic from cloud service operators or Content Delivery Networks, which is being delivered on behalf of their many corporate clients, would be taken into consideration. We note that in Para 6.72 it is stated there is a perceived issue that traffic may be becoming "peakier", however Para 3.46 says that this is not the case. In addition, as Para 6.73 says, traffic growth rates are relatively stable (in fact decreasing year on year), and while the same paragraph continues in mentioning uncertainty around future consumer use cases and their network requirements, we would suggest Ofcom address such problems if they ever arise, not before such use cases are even identified. Furthermore, we would recommend Ofcom explores the impact that smart tech, such as connected TVs and smart vehicles, has on traffic (indeed, Ofcom categorised connected TVs in its report on Digital Markets as "a digital content gateway"). Whilst the consultation

	repeatedly references future use cases such as smart vehicles, there is limited evidence of data requirements for this use case, uptake from users, and the general use case. We would appreciate more information to clarify why we need an intervention in the absence of substantial evidence. Ofcom should consider looking at traffic across the ecosystem to inform a comprehensive regulatory approach.
Question 9: Do you agree with the approach in our guidance in Annex 5 in relation to the use of traffic management to address congestion, including transparency requirements, improved regulatory monitoring and reporting of general network performance metrics, the use of traffic management and the impact on service quality?	We would highlight Ofcom's note that CAPs and network operators already have various relationships in place in order to effectively plan network capacities, share information on traffic management and issues, and work together to provide the best possible user quality of experience. We would encourage Ofcom to think about how to motivate these practically effective interactions and broaden them to a larger number of stakeholders as needed, rather than focus mainly on a regulatory oversight approach.
Question 10: What are your views on a more focused approach to traffic management to address congestion?	We agree that risks of congestion need to be addressed, but note that technological developments and industry-wide efforts are facilitating improved traffic management, in particular through local peering, the deployment of Content Delivery Networks, and the continued and sustained reduction in per Mbps unit costs for core network deployment. We also note that experience has shown that networks are already resilient: despite temporary increase in traffic consumption during the Covid lockdown period, the networks proved more than able to cope, in the UK as in other parts of Europe and the world. It is interesting to note that a spate of recent studies suggest a pattern of declining traffic growth, that was already evident before the pandemic, has

	reasserted itself as lockdowns have eased around the world. For example, Openreach recently noted that their overall traffic volume for 2022 was only 2.5% higher than in 2021. There are encouraging facts pointing to an existing responsible approach by the actors involved. Overall, we want to reaffirm the basic neutral traffic management principles: i.e. any traffic management should be in place for purely technical reasons, deployed only in a time limited manner, and in a manner that does not unduly disadvantage certain types of services (e.g. VoIP or P2P). Google is committed to develop new technologies to facilitate improved traffic management. At Google, we also design our services and invest in products that minimise traffic requirements, support operators' effective network management and reduce their costs. It is inherently in Internet companies' interest to minimise congestion so as to deliver a good user experience, otherwise users will simply not use their service anymore. We do so for instance with YouTube compressing video data so it can be most efficiently transmitted across the Internet in direct response to consumer demand. Our investments include subsea cables, large data centres for storing content; purchased capacity from Internet backbone providers to transport the data over long distances; peering and content delivery infrastructure at the edges of the network and beyond where we interconnect with ISPs who carry traffic demanded by their customers the vital last few miles to the user. We have established

	this network as an alternative to transit, climbing the “ladder of investment” as our needs have scaled. To illustrate our recent investments, from 2015-18 we announced that we had spent $30 billion in improving our infrastructure globally. Our investments in this space also extend to designing our services and products in a way that supports ISPs to effectively manage their network and reduce costs. More generally, broadband networks have functioned smoothly within a neutral framework for decades now. Government and industry have taken steps to prevent outages, including the development of technical standards for network operation in times of congestion, implementing short-term traffic management measures where objectively justified by technical criteria, and adding capacity to existing infrastructure—all consistent with the open internet rules. Our longstanding action and partnership with industry illustrates that steps are being taken to address any risk of congestion and agree with the proposals in the consultation that ISPs must ensure that action on traffic management should reflect the severity of congestion and communicate to customers how they will comply with quality standards and what impact traffic management will have on the services they want to use. In this context, we also note and welcome Ofcom’s assessment that the proposals for ISPs to charge CAPs fees is not justified and would not be an appropriate measure to achieve broader public policy objectives, such as coverage targets.
Please provide any further evidence you have to support your responses.	

Specialised services

Question	Your response
Question 11: Do you agree with our assessment of specialised services and our proposed approach?	Confidential? – N We accept that there are some specific and emerging use cases, in particular in the enterprise space such as remote surgery or vehicle telematics, that may require a dedicated or specialised service offering. However, there is insufficient evidence as to why this would also extend to consumer services such as consumer augmented reality (AR) or virtual reality (VR) applications, and why these consumer facing services could not function well under the 'normal', best efforts Internet. We are unaware of any consumer service from a CAP that has been hindered or not launched because it needed a specialised service path that was not available due to the network neutrality framework.
Question 12: Do you agree with the approach in our guidance in Annex 5 in relation to specialised services, including transparency requirements, improved regulatory monitoring and reporting of the need for optimisation of a service, the general performance of internet access services and the impact of specialised services on the quality internet access?	We believe Ofcom should take a risk-based approach to establishing the framework for allowing ISPs to offer specialised services and bespoke Quality of Service (QoS). This should consider the risks of: • **Adding complexity in navigating the market:** At the moment, most retail consumers buy an Internet package, which by and large, is homogenous. Allowing ISPs to offer different 'tiers' of internet could make it more difficult for end users to determine which package is most suitable for their needs. This problem would be particularly acute for vulnerable consumers. • **Bifurcated internet:** These proposals could lead to fast and slow internet lanes. Traditionally,

new services and websites succeeded or failed based on the quality of their offering. This paradigm may no longer hold as services beyond a “minimum level” is often where innovation happens.

- **Limiting future use cases:** By creating a special lane for certain services that will inevitably cost more, we could be limiting the incentives for companies to innovate. This may be counterproductive from a public policy and economic / business perspective: the Telecom sector has been struggling to come up with new use cases that will drive 5G demand from consumers. Introducing a higher price for using specific services, as opposed to promoting 'standard' access to the Internet via 5G risks seriously stunting 5G’s take-up and growth prospects. It would realistically lead to only a few top tier customers switching to the premium service, whereas the majority would happily stay with their current cheaper 4G service where they can already access the current range and choice of all internet services with the existing, already good quality of experience.
- **Consumer prices:** During a time of significant inflation, we should be mindful of introducing changes that could lead to higher prices for consumers. This may impact in particular certain (vulnerable) communities.

	Therefore, we would argue that specialised services should only be offered in the following circumstances: • There is a demonstrable need or requirement for different QoS for an application that cannot function over the Internet; • Certain transparency obligations that require ISPs to clearly articulate to users what they are signing up for and the effect on their habitual consumption of Internet services and applications; • It should not compromise general obligations for ISPs to make 'best efforts' to deliver Internet access. Our view is that, as a matter of principle, the availability of these new services should not impair the quality of the open Internet by squeezing the bandwidth available. Additionally, measures such as certain ISP pricing, marketing, or preferential technical parameters would shape user behaviour and lead end-users to primarily (or only) use services that are available in these restricted specialised services, rather than the diversity of applications they can choose from freely on the open Internet.
Please provide any further evidence you have to support your responses.	

Scope of the net neutrality rules, terminal equipment and public interest exceptions

Question	Your response
Question 13: Do you agree with our assessment of the terminal equipment rules and our proposed approach?	Confidential? – N -

Question 14: Do you agree with our assessment of internet access services provided on aeroplanes, trains, buses and coaches and our proposed approach?	-
Question 15: Do you agree with our proposed approach to emergency 999 communications services and that we should consider amending the GCs to achieve this?	-
Question 16: Do you agree that ISPs should be allowed to block scams and fraudulent content and provide in-network parental controls and content filters?	We agree with Ofcom's assessment that we need to consider carefully how to ensure content is not inappropriately blocked, and balance the rights of end users to access information and content with the need to protect people from complex criminal activity. We support efforts to prevent harmful content, especially known scams and fraud, and have taken several actions to protect users from this type of harm, including requiring financial services advertisers in the UK to be authorised by the Financial Conduct Authority (unless they qualify for a very limited number of exemptions). However, we would caution that due to the deliberately deceptive nature of scams it is difficult for one party to correctly identify fraudulent activity that takes place within a wider supply chain and this could lead to overblocking legitimate content. Furthermore, Ofcom's proposal will not eradicate bad actors and online fraud is a dynamic phenomenon. There is a risk that the suggested measures could encourage bad actors to game the system more aggressively. We feel other vehicles, such as the Online Safety Bill, are better placed to address fraud with the recognition that digital fraud is highly complex.
Please provide any further evidence you have to support your responses.	