

My answers to this Ofcom consultation are based on a belief that the UK will best be served by a point to point optical fibre based independent passive network open to all operators under equivalent terms. Such a network will lead directly to reduced costs, enhanced competition, greater coverage of the UK population by high capacity services and enhanced innovation.

Signalling a regulatory objective of an independent passive optical fibre network will give all operators the stability to plan.

The basis for my belief is:

- 1) LLU is evidence of the benefits of regulating at the most fundamental level possible. However LLU is limited by the reach and performance of copper. Such that UK coverage requires many aggregation nodes. Only aggregation nodes with high densities of customers can support competition. The benefit of optical fibre is its greater reach with undiminished bandwidth. Thus fewer sites (I estimate under 100) can serve the entire UK. Such sites will incorporate city, urban and rural areas bringing the benefits of competition to a greater percentage of the UK.
- 2) NGA shows that the higher in the value chain competition is forced, the lower the prospects for competition (reduced margin) and the lower the opportunity for innovation. An optical fibre based passive remedy equally open to all operators maximises the potential for innovation and leaves the operator with the greatest possible margin to utilise.
- 3) Technology is changing faster than regulation can easily keep pace. Optical fibre has been a stable medium for decades and there is no visible challenger to its dominance. Optical fibre also has the capability to deliver whatever future bandwidths are required (currently 25Tbit/s per fibre) over unregenerated distances greater than 50km. Optical fibre also appears to have the longevity, when installed correctly, to last at least 50 years and probably over 100 years without degradation.

Such a network can also reduce or remove the requirement for backhaul. Backhaul is a consequence of the short range of copper, resulting in large numbers of sites that need to be interconnected, resulting in a three tier network of access, aggregation and core. The greater reach of an optical fibre based network allows the access sites to be connected directly to a core site. Removal of backhaul, and its associated aggregation layer, will save space, power and improve reliability.

Question 1: Do stakeholders agree that promoting effective and sustainable competition remains an appropriate strategy to deliver efficient investment and widespread availability of services for the majority of consumers, whilst noting the need for complementary public policy action for harder to reach areas across the UK?:

Yes with the caveat outlined in my answer to Q2.

Question 2: Would alternative models deliver better outcomes for consumers in terms of investment, availability and price?:

Yes in the markets downstream from the physical layer.

I think we should aim for an all fibre based access physical layer. Duplication of this layer only makes economic sense in heavily built-up areas (residential and/or business). I think we should therefore also aim for a single physical layer open to all operators on equal

terms. I think this will provide the greatest opportunity for competition to develop. The access layer, based on optical fibre, can extend well beyond that for copper with rural access potentially covering distances of 50km to 100km. As I have noted in my additional comments, an optical fibre access network could also remove the need for an active aggregation network.

Question 3: We are interested in stakeholders' views on the likely future challenges for fixed and mobile service availability. Can a 'good' level of availability for particular services be defined? What options are there for policy makers to do more to extend availability to areas that may otherwise not be commercially viable or take longer to cover?:

Good continuing availability for services is more likely over fibre than copper. Policy makers should create the environment for the UK to deploy fibre to the home and businesses as soon as possible.

Whilst we continue to squeeze the last drop of useful life from our copper network the funds to extend the fibre network will be limited. Optical fibre is the future, investing in more advanced electronics on shorter copper or Coax loops can only be a stop gap measure. The increased deployment of electronics, to deliver higher speeds over Copper, has the potential to reduce service availability.

More and longer access over fibre improves availability and reduces power consumption. The costs of deploying such a network, nationwide, appears to be within the scope of private funding if all customers move to fibre when it is available allowing the copper network to be dismantled.

Another benefit of widespread fibre deployment is most of the investment is in trenching, so the much of the money spent goes directly to the individuals doing the work helping boost our economy.

Question 4: Do different types of convergence and their effect on overall market structures suggest the need for changes in overarching regulatory strategy or specific policies? Are there new competition or wider policy challenges that will emerge as a result? What evidence is available today on such challenges?:

As discussed in my additional comments, I am concerned backhaul is seen as an important issue. I see backhaul as the legacy of our copper based telephone network architecture. It will have little or no relevance in a future modern fibre based network.

If, as I believe, network architectures need to shift fundamentally to facilitate widespread competition, greater coverage of more uniform services and future proofing then the regulatory strategy needs to adapt to support this change.

Evidence of change comes from the rise of cloud computing, data centres and internet exchanges. A few locations are becoming central to delivery of flexible, low cost services. This can only work if the transport network provides cheap, high capacity, high quality and high availability connectivity.

Question 5: Do you think that current regulatory and competition tools are suitable to address competition concerns in concentrated markets with no

single firm dominance? If not, what changes do you think should be considered in this regard and why?:

For the access transport market there is a clearly dominant provider and a clear large scale second provider. All of the others are niche players.

I think the UK needs a single provider of physical access infrastructure, based on optical fibre in plastic ducts, with equal access for all service providers. This access network should be designed to connect a few (under 100) large core nodes to every business and residence in the UK within a short time period (5 years would be good).

Question 6: What do you think is the scope for sustainable end-to-end competition in the provision of fixed communications services? Do you think that the potential for competition to vary by geography will change? What might this imply in terms of available regulatory approaches to deliver effective and sustainable competition in future?:

As seen with LLU, competition arises where there is a sufficient density of customers.

A regulatory strategy that delivers access to high customer densities, at a limited number of locations, will facilitate sustainable competition.

A fibre based access network will allow customers to be aggregated across a wider area into fewer (under 100) core nodes. Such customer densities will facilitate competitive conditions for a greater proportion of the UKs residential and business population.

Provision of an open fibre based access network, concentrated on a few large nodes, is likely to support thriving competition and innovation. The regulatory approach can then concentrate on maintaining an open and equally accessible physical layer rather than having to intervene in active services.

Question 7: Do you think that some form of access regulation is likely to continue to be needed in the future? If so, do you think we should continue to assess the appropriate form on a case by case basis or is it possible to set out a clear strategic preference for a particular approach (for example, a focus on passive remedies)?:

I think access regulation will continue to be required but it should be as minimal as possible. I think it would be a good strategy to signal a clear strategic preference for passive remedies. Such a clear direction gives all operators and customers a solid foundation on which to plan their business.

Question 8: Do you agree that full end-to-end infrastructure competition in mobile, where viable, is the best means to secure good consumer outcomes? Would alternatives to our current strategy improve these outcomes, and if so, how?:

End to end infrastructure competition has its place but multiple infrastructures are inefficient and ultimately raise the costs to consumers.

Infrastructure competition works when coverage is a major differentiator. As mobile technology advances the coverage of earlier services (e.g. 2G) becomes similar for all vendors. At this stage differentiation between vendors is on service level and infrastructure

sharing can significantly reduce mobile operator's costs, leading to lower consumer prices. I think the physical layer of a mobile network looks increasingly like the physical layer of the fixed network and the two can be regulated as one network. Mobile service providers can compete on deployment of advanced services on a shared infrastructure and on service quality. A common regulated shared infrastructure also lowers the barrier for new entrants.

Question 9: In future, might new mobile competition issues arise that could affect consumer outcomes? If so, what are these concerns, and what might give rise to them?:

Infrastructure is a major cost for mobile operators. Sharing infrastructure reduces these costs but could result in reduced competition. New entrants face a huge barrier if they have to build their own infrastructure. A regulated physical layer, equally open to all operators, could allow entrants to initially focus on specific geographic areas with innovative offerings.

Question 10: Does the bundling of a range of digital communications services, including some which may demonstrate enduring competition problems individually, present new competition challenges? If so, how might these issues be resolved through regulation, and does Ofcom have the necessary tools available?:

I'm not sure bundling introduces new competition challenges, it has been around for many years. Making information about services clear to consumers and ensuring switching between individual services is simple and not subject to punitive costs is one way to tackle bundling. Ofcom seems to have managed to impose/persuade industry to do this in the past so I'm not convinced new tools (powers) are required.

Question 11: What might be the most appropriate regulatory approaches to the pricing of wholesale access to new and, risky investments in enduring bottlenecks in future?:

The enduring bottleneck is physical access. The technology to provide such access is not risky, it is optical fibre in plastic ducts. There is nothing else on the horizon that matches optical fibre in plastic ducts for bandwidth, immunity to interference, resistance to ageing, cost, quality and reach.

A regulated infrastructure based on point to point optical fibre to every residence and business in the UK, served from a few (under 100) nodes, facilitates competition for the provision of existing and innovative services.

The problem is how to pay for such a fibre based network. The current Openreach wholesale cost of a copper pair is £84.78 per year. I think a fibre network across the UK (given an expected asset life of 50 to 100 years) could be financed by switching the charge for copper to fibre as the network is constructed.

Question 12: How might such pricing approaches need to evolve over the longer term? For example, when and how should regulated pricing move from pricing freedom towards more traditional charge controls without undermining incentives for further future investment?:

There is a problem with allowing an operator with significant market power to provide active components to services. LLU leaves competing operators the maximum financial headroom to recover innovation and deliver good quality services. In contrast NGA reduces the headroom competing operators have because BT takes a proportion to cover their VDSL2 roll-out costs and operating expenses. Similarly EAD from Openreach imposes active equipment costs on operators. Such operators do not have the option of trying to deliver services, using their own equipment, in a more efficient manner. Regulating at the most basic level possible (delivery of passive infrastructure, space and power) focusses the regulated entity on a simpler task making it easier to monitor their performance. At the same time operators purchasing the regulated service have the most scope for developing efficient services and innovation.

Question 13: Are there any actual or potential sources of discrimination that may undermine effective competition under the current model of functional separation? What is the evidence for such concerns?:

Yes, Openreach act as the gatekeeper for new services. They impose their risk threshold and require national coverage. These conditions make it almost impossible for new services to be launched, even services proposed by Openreach.

Question 14: Are there wider concerns relating to good consumer outcomes that may suggest the need for a new regulatory approach to Openreach?:

Yes. Openreach has a complex organisation built over many years that struggles to introduce change. Openreach struggle to understand their customer's issues and often propose changes that cause real problems for them. Openreach needs the freedom to break completely from its past, to adopt new working practices and to build a culture of customer first.

Question 15: Are there specific areas of the current Undertakings and functional separation that require amending in light of market developments since 2005?:

Yes. The requirements of the Undertakings and the requirements of market reviews are now complexly linked making regulation and enforcement time consuming and obscure. A clean sweep of the regulatory position would, I think, provide a simpler clearer structure resulting in less work and better outcomes.

Question 16: Could structural separation address any concerns identified more effectively than functional separation? What are the advantages and challenges associated with such an approach?:

I think structural separation would remove the need for Openreach to balance the needs of BTs wider strategy with the needs of investing in an efficient easily maintained network. Structural separation would need, I think, to be accompanied by a fresh resolve for the new company to only offer passive services, LLU, SLU, dark fibre, space and power. The current VDSL2 roll-out is reversing the competitive position in the UK as BT takes more revenue from the value chain. G.fast, if it ever becomes practical in volume, will further reduce the value available to competing operators.

Question 17: What do stakeholders think are the greatest risks to continuing effective consumer engagement and empowerment?:

Consumers have limited time to understand complex pricing contracts. This leads to common services being priced and understood well but less frequently used services vulnerable to overpricing.

Perhaps services can be rated against common uses with warnings required when a particular use (e.g. data roaming or international calls) is priced well above the market average? A bit like the food labels for sugar, fat, salt etc.

Question 18: What indicators should Ofcom monitor in order to get an early warning of demand-side issues?:

NO comment

Question 19: What options might be considered to address concerns about consumer empowerment at each stage of the decision-making process (access, assess, act)? What more might be required in terms of information provision, switching and measures to help consumers assess the information available to them? What role may Ofcom have to play compared to other stakeholders (including industry)?:

No comment

Question 20: Are there examples in competitive or uncompetitive sections of the market where providers are not currently delivering adequate quality of services to consumers? What might be causing such outcomes?:

Yes. Most current broadband is delivered over copper which suffers from distance dependent capacity; is prone to interference reducing quality; and the multiple stages of active equipment reduces reliability and increases costs.

Residential and business users have little choice over the provider of the physical network and transport equipment used.

Moving to an open passive network reduces the task of the network provider to only delivering a quality physical infrastructure. The network architecture and equipment would be subject to competition, hopefully resulting in greater end-customer choice

Question 21: What further options, if any, should Ofcom consider to secure better quality of service in the digital communications sectors?:

No comment

Question 22: Might there be future opportunities to narrow the focus of ex ante economic regulation whilst still protecting consumers against poorer outcomes?:

As networks converge, with mobile and fixed access both requiring higher bandwidths to end-customers, the only future proof foundation is optical fibre. Regulating the physical

transport layer in such a way as to deliver a source of concentrated customers (less than 100 core nodes for example) maximises the opportunity for service competition to flourish and innovation grow. This should reduce the need for intervention on a service by service basis.

Question 23: Where might future network evolutions, including network retirement, offer opportunities for deregulation whilst still supporting good consumer outcomes?:

Whilst technology advances faster than regulation can evolve the underlying physical network has changed little. Optical fibre in plastic ducts is a stable foundation that regulation can use to facilitate innovation and competitive service delivery. The network that needs to be retired is the copper network. BT benefits from control of the infrastructure copper networks require because it blocks alternative operators from challenging BTs scale and scope.

Question 24: What are the potential competition and consumer protection implications of the rise of OTT services? Might the adoption of such services enable future deregulation without raising the risk of consumer harm?:

OTT services require a physical network to be delivered. There is plenty of opportunity for operators to develop efficient, high quality delivery mechanisms end-customers will pay for to gain access to OTT services. But only if the operators have equal access to an optical fibre based infrastructure. Otherwise the operators are constrained by the current network architecture and the limitations of the active delivery mechanisms BT choose to deploy.

Question 25: Are there any areas where you think that regulation could be better targeted or removed in future? What would be the benefit of deregulation as well as the main risks to consumers and how these could be mitigated? Please provide evidence to support your proposals.:

There seem to be very few solid facts to base a regulatory strategy on. However there are some which I think point the way for the next 10 years:

1. LLU shows that the more customers available at a single location the greater the competition
2. NGA shows that the higher in the value chain competition is forced the lower the prospects for competition (reduced margin) and the lower the opportunity for innovation
3. Optical fibre has the capacity, reach, future potential and longevity (no other medium is challenging it) to provide a stable basis for long term regulation and to consolidate large numbers of customers and a few core sites.
4. Technology continues to change so fast that trying to regulate it will always be a losing battle.

The above four points suggest to me that a regulatory strategy based on an independent passive optical fibre point to point network, equally open to all operators, offers the best hope of improving the competitive and innovative communications market in the UK for a majority of end-customers (business and residential, city, urban and rural).