

# Detica's response to the EC's Net Neutrality Consultation



### **Purpose of this document**

This document outlines Detica's response to the European Commission consultation on the open internet and net neutrality in Europe, published on 30 June 2010.

Our response to this consultation is based on our experiences of working with and discussing net neutrality issues with industry stakeholders over the last 2 years.

### **About Detica**

Detica delivers information intelligence solutions to government and commercial customers. We help them collect, exploit and manage data so they can deliver critical business services more effectively and economically. We also develop solutions to strengthen national security and resilience.

By combining technical innovation and domain knowledge, we integrate and deliver world-class solutions—often applying our own unique intellectual property—to our customers' most complex operational problems. Our services range from strategy formulation and business change through to software and hardware technologies, systems integration and managed service delivery.

Detica is part of BAE Systems, a global defence, security and aerospace company with approximately 107,000 employees worldwide.

Detica works with the majority of UK-based Internet Service Providers (ISPs) and Mobile Network Operators (MNOs) and a number of Content Providers (CPs). During the last twelve months we have been working with ISPs in the area of network traffic measurement. Detica is therefore in an excellent position to participate in this debate.

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**Question 1: Is there currently a problem of net neutrality and the openness of the internet in Europe? If so, illustrate with concrete examples. Where are the bottlenecks, if any? Is the problem such that it cannot be solved by the existing degree of competition in fixed and mobile access markets?**

Detica's response to this question is focussed on the UK where we do not believe that there is currently a problem with net neutrality, because the UK has a highly-competitive market in both mobile and fixed-line broadband provision. Where UK-based ISPs are reputedly taking a more proprietary approach (for example BT's publicised 'throttling' of video services such as BBC's iPlayer and YouTube between 17.00 and midnight) consumers can choose to switch to another provider.

**Question 2: How might problems arise in future? Could these emerge in other parts of the internet value chain? What would the causes be?**

As business models change, discrimination could begin to creep into the way services are provided, particularly where one ISP stands to gain (or lose) at the expense of another ISP or service/application provider. The possible causes are:

**1. A service provider wanting to protect existing revenue**

For example, an ISP could decide to degrade voice traffic from competing suppliers (e.g. Skype) which used their network in the hope that customers would decide to use their own proprietary voice-based products instead.

**2. A content / service provider seeking to hide its financial investments from the market**

For example, a content provider could buy premium services from ISPs (e.g. dedicated channel space) on the proviso that its services were prioritised over other similar content providers. In the scenario where this information was hidden from the market, this could lead to a distortion in transparency, thereby negatively affecting customer choice.

**Question 3: Is the regulatory framework capable of dealing with the issues identified, including in relation to monitoring/assessment and subsequent enforcement?**

No. Currently, there is no legal obligation for ISPs to publish their traffic management policies at either a general level – such as throttling traffic for all applications – or on a more detailed level – for instance by guaranteeing different minimum levels of service for specific types of content.

Furthermore, even when information is published, companies are able to present it in a manner that best suits their business needs because terms have not been standardised across the industry. For example, information on connection speed can be the minimum, maximum or average connection speed that a consumer experiences; a true like-for-like comparison is not easily available because there is no standard measurement method.

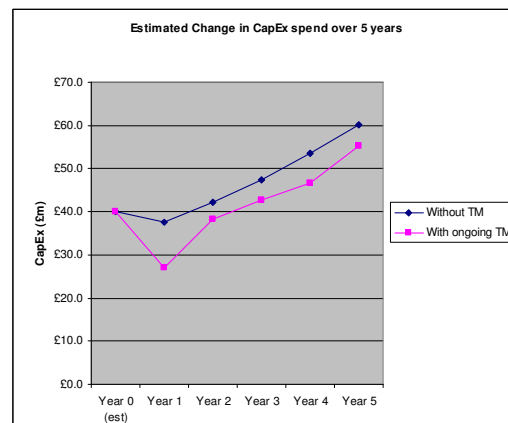
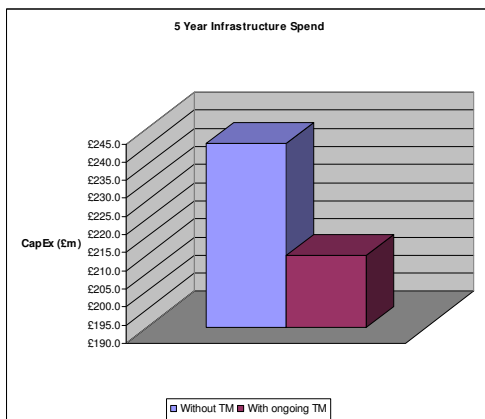
In the UK currently, information relating to connection speeds is being publicly debated. Although Ofcom has published the results of its annual survey of offered vs. actual connection speeds, consumers still do not have a real-time view of the connection speed they actually receive.

**Question 4: To what extent is traffic management necessary from an operators' point of view? How is it carried out in practice? What technologies are used to carry out such traffic management?**

Traffic management is necessary from an operators' point of view to help them manage investment decisions. Currently, most revenue models for consumer broadband services are based on providing access rather than managing use. These models do not easily support pricing-structure changes as consumer consumption continues to increase. Typically, this leaves ISPs unable to raise new capital to upgrade networks to cater for increasing demand.

ISPs have, in the main, moved unilaterally to curb their investments in broadband provision through the use of better network management controls – a move that will make better use of their existing infrastructure. However, unless additional revenue can be raised to make investment possible, such controls will merely postpone congestion problems and potentially lead to a more general reduction in quality of service as demand increases across the board.

Traffic management can, however, provide an opportunity for service providers to change their pricing structures to a usage-based model, which may go some way towards generating the capital needed to upgrade networks and relieve congestion. Such models can already be seen in the market, with O2 in the UK having just launched a suite of broadband packages which are tailored to consumers' daily consumption needs: 'The Basics' is targeted at email and general browsing users, and 'The Works' is suitable for the heaviest data users who download films and use online gaming. Similarly, PlusNet offers their 'Plusnet Pro' package, which makes use of traffic management to prioritise all gaming and VoIP traffic for niche consumers.



Our analysis of network-traffic data from one UK ISP has shown that, over a five-year period, adopting an ongoing traffic management capability has the potential to save the organisation £30m in capital costs. As the graphs above demonstrate, traffic management does not remove the need for additional infrastructure investment, it merely reduces the amount required and slows the rate of increase that would otherwise be needed.

As Ofcom outlines in its discussion paper<sup>1</sup>, “*there are a number of technical and non-technical ways in which internet traffic is or could be managed. Some of these are outlined below:*

- *The Transmission Control Protocol is one of main internet protocols and it is used to manage end-to-end connections across the internet in a bit-neutral way. It remains the most important means of managing congestion on the Internet by moderating individual flows of traffic.*
- *Using Deep-Packet Inspection devices (DPI), internet traffic can be analysed and classified according to the type of service it is delivering. This can then be used to limit different classes of traffic, on a per-subscriber basis or total-volume basis, or to block illegal content, depending on its implementation.*
- *Network operators/ISPs could impose volume caps that limit the total volume of traffic at different times, both in relation to upstream and/or downstream traffic.*
- *Network operators/ISPs could ‘splice’ the broadband connection to a household by allocating bandwidth to separate internet services being accessed by different members of the household at the same time.”*
- Network operators/ISPs could use policy servers that offer a more dynamic way of managing traffic.

**Question 5: To what extent will net neutrality concerns be allayed by the provision of transparent information to end users, which distinguishes between managed services on the one hand and services offering access to the public internet on a 'best efforts' basis, on the other?**

We believe that the provision of transparent information to end users will allay concerns on net neutrality, but only if all ISPs provide such details in a standardised and unambiguous way. This requires all services to be measured in the same way. Consequently, the increase in transparency will allow a more direct comparison between different ISP providers and their services. Consumers, therefore, will be able to make better-informed decisions based on their personal preferences rather than on ambiguous terms. Agreement on quality-of-service definitions and how to take measurements in the same manner on a national basis are vital to this process. Only then will consumers be confident that all ISPs are acting in a consistent, open and compliant way.

Greater transparency will enable trust to be re-established with consumers, who will then more readily be able to accept the benefits of active traffic management and their ISP's ability to deliver it.

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<sup>1</sup> Ofcom's Traffic Management and 'net neutrality' discussion paper, June 2010

To understand how traffic management can be used to benefit consumers, ISPs must first measure (using passive technology) the relative volumes of different types of traffic crossing their network. This will provide insight into how traffic management can be used to provide differentiated services to different user segments, such as high-bandwidth gamers.

These premium services must be marketed and priced according to consumption needs rather than pure headline connection speeds, so that consumers can make informed choices. As more of these services come onto the market, revenue models will shift from access to usage, providing ISPs with a mechanism to raise the capital required to respond to network-upgrade requirements.

**Question 6: Should the principles governing traffic management be the same for fixed and mobile networks?**

Yes, as both fixed and mobile networks ultimately share some of the same infrastructure, for example in the backhaul and internet-core areas. Furthermore, with additional infrastructure – such as Wi-Fi spots – becoming more commonplace, the blurring of fixed and mobile network infrastructure will continue to occur.

**Question 7: What other forms of prioritisation are taking place? Do content and application providers also try to prioritise their services? If so, how – and how does this prioritisation affect other players in the value chain?**

Other forms of prioritisation do occur within both the content and application space. For example, Skype is able to prioritise its service over other services residing on a consumer's device to use the most uncongested channel available. For some users, the result is that other applications experience problems because they are not able to connect to the Internet in the same seamless way.

**Question 8: In the case of managed services, should the same quality of service conditions and parameters be available to all content/application/online service providers which are in the same situation? May exclusive agreements between network operators and content/application/online service providers create problems for achieving that objective?**

No, the same quality of service conditions should not be available to content/application/online service providers in the same situation. Competition is needed between these players in the value-chain so that differentiated services can be created to meet the needs of different user groups. To a large degree, the market is proving to be self-regulating because consumers can choose a supplier that best meets their needs – those with traffic management policies and those without. In today's challenging operating environment, the resulting churn goes some way to driving ISP behaviour. Different companies also have different business models, and forcing all of these to adopt the same quality of service conditions is likely to stifle innovation and lead to disaggregation for some organisations. However, in order for a managed service environment to continue to be successful, a truly competitive marketplace in which all the other value-chain providers reside must be maintained, as this will allow consumers the choice of service provider(s) with whom they wish to contract.

**Question 9: If the objective referred to in Question 8 is retained, are additional measures needed to achieve it? If so, should such measures have a voluntary nature (such as, for example, an industry code of conduct) or a regulatory one?**

The creation and successful adoption of a voluntary code will ensure that consumers' needs are best served. This should request that all signatories publicise their quality of service data against a set of standardised criteria, using industry-wide definitions for their product set. By engaging with and encouraging the major ISPs in the marketplace to sign up, we believe that it would also encourage the remaining players to adopt the code to avoid being put at a competitive disadvantage. Consumers would then be able to choose which of the standardised items of information were most important to them and then make an informed decision with whom to contract. As with the implementation of all voluntary codes, compliance with all data protection and analysis legislation should be put in place.

**Question 10: Are the commercial arrangements that currently govern the provision of access to the internet adequate, in order to ensure that the internet remains open and that infrastructure investment is maintained? If not, how should they change?**

No, the current commercial arrangements do not allow for an open internet and for the maintenance of infrastructure investment, especially in the mobile broadband space. As stated in Question 4, until the revenue model for service providers is based on usage, it is likely that rising levels of consumer traffic will cause congestion problems on all networks for all members of the value-chain. It is only when generating new revenue streams from different – usage-based – business models becomes possible that adequate infrastructure investment will be maintained.

**Question 11: What instances could trigger intervention by national regulatory authorities in setting minimum quality of service requirements on an undertaking or undertakings providing public communications services?**

The trigger point for NRAs to intervene by setting a minimum Quality of Service (QoS) would be when the market stops catering for all the needs of all consumers. We believe this situation could arise in two cases: where there is a lack of strong local competition and where there is a lack of an acceptable “best efforts” service. The latter is an issue because there is a real possibility that certain applications that require a minimum QoS become unusable should they encounter significant amounts of contention. Examples of such services include VoIP services, online gaming and some virtual private network services, such as CITRIX. Should this occur, and the next available service was deemed prohibitively expensive, this could negatively impact the pervasiveness of broadband services within the EU.

Both of these eventualities are required before a minimum QoS is stipulated. Without only one, there is a possibility that the market will “self-correct” through the provision of all the required services to meet all consumers’ needs.

Care must be taken, however, particularly for customers a long way from the local exchange: meeting minimum speed and QoS requirements means making measurements on the network. A programme of infrastructure enhancement and spend may be required to meet the defined and measured speed and QoS. As this may require apportionment across the ISP’s entire user base, it may result in reduced direct accessibility to broadband services for customers of limited financial means.

**Question 12: How should quality of service requirements be determined, and how could they be monitored?**

Quality of service requirements could be determined by collating the ideas from a number of stakeholders within the value-chain. For this list to be effective, however, a standardised set of definitions and a standardised way of collecting this data need to be clearly defined to ensure a like-for-like comparison is possible.

As the majority of these requirements affect the speed of service that a consumer experiences, we believe that real-time information on traffic management – including actual broadband speed and quality of service – should be delivered to every consumer’s home.

There is an opportunity to capture this data by building on existing products such as the BT ‘Wholesale Performance Tester’, which is a broadband performance-measuring tool. This data could be presented in a number of ways, including illuminated scales on modems/routers, desktop dials or web pages.

Such information would enable consumers to see how their service is affected during periods of congestion (for example 1800-2000hrs) and the impact of any restrictions applied by their service provider.

Any data on speed and quality is best presented alongside the consumer’s usage pattern, so that they can either tailor their usage or look for alternative services that better suit their needs.

Data should be derived in a uniform way across the market with the measures presented in a comparable format to enable a like-for-like comparison.

**Question 13: In the case where NRAs find it necessary to intervene to impose minimum quality of service requirements, what form should they take, and to what extent should there be co-operation between NRAs to arrive at a common approach?**

In the first instance, intervention should be in the form of a voluntary code, as defined in Question 9.

We do not believe co-operation on an approach is needed between NRAs because different EU member states have taken different paths to stimulate the delivery of broadband services. For example, the government in France has subsidised the fibre infrastructure, yielding a proportionately higher average speed to consumers, whereas in the UK the infrastructure has been left to market forces, resulting in a comparatively lower average speed. Consequently, an inter-EU approach on harmonisation of quality of service benchmarks would be difficult to achieve.

**Question 14: What should transparency for consumers consist of? Should the standards currently applied be further improved?**

Within the recent Ofcom discussion paper<sup>2</sup>, a useful list of information to improve transparency was suggested:

- *“price of the package and what it includes i.e. connection speed rate and services you can receive at different times throughout the day;*
- *description of traffic management practices;*
- *if traffic management is used, why and how;*
- *how traffic management can affect a user’s internet experience for different types of internet services;*
- *any changes made to their existing traffic shaping practices;*
- *information on usage caps and costs of exceeding that usage cap; and*
- *options for upgrade.”*

Standards could be further improved as per the answer outlined in Question 5.

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<sup>2</sup> Ofcom’s Traffic Management and ‘net neutrality’ discussion paper, June 2010

**Question 15: Besides the traffic management issues discussed above, are there any other concerns affecting freedom of expression, media pluralism and cultural diversity on the internet? If so, what further measures would be needed to safeguard those values?**

We believe one area, in particular, would benefit from greater clarity and guidance from the EC: how ISPs can manage traffic in line with human rights, in particular but not limited to the rights to privacy and freedom of expression.

The EU has implemented directives and other legislation to protect the rights of individuals<sup>3</sup>. Consequently, ISPs should manage traffic in line with these in order to alleviate congestion and maximise the revenue from their infrastructure, however guidance is required in order to ensure that they are able to do this without fear of breaching subscribers' human rights, as well as to encourage innovation in this space.

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<sup>3</sup> Such legislation in the UK includes but is not limited to the Human Rights Act, 1998; Data Protection Act, 1998; Regulation of Investigatory Powers Act, 2000