



**Vodafone's response to BEREC's assessment of IP-interconnection in the
context of Net Neutrality**

July 2012

Vodafone welcomes comments or questions on the views expressed in this submission. They should be directed to Ben Wreschner – ben.wreschner@vodafone.com

1. Summary

Vodafone welcomes the opportunity to respond to BEREC's consultation on IP-interconnection. This response forms part of our overall response to three consultations on net neutrality and should be read in conjunction with our other submission on Differentiation Practices and guidelines on Quality of Service.

Vodafone supports most of the initial conclusions contained in the IP-interconnection consultation document:

- BEREC is right to say that the IP interconnection market is currently functioning well in the absence of regulation.
- the current market for IP-interconnection is primarily driven by uni-directional (point to multi-point) content services. The economics of bi-directional (point to point) services, especially voice services, are different. It should not be assumed that the technical and commercial models that have been established for a content-driven internet will work best for voice or other bi-directional services when they are predominantly delivered over the internet.
- the presence of alternative, competing methods of IP-interconnection – transit, peering, content distribution networks (CDNs)/caching - constrains the behaviour of market participants and reduces the potential for market power.
- BEREC should not assume that market players that previously had market power in the telephony world (network operators) have market power in the IP world. Instead BEREC/NRAs should identify whether market power exists or is likely to exist at **any** level within the internet value chain. Market power could equally or more likely be obtained by service providers, content providers or content distributors.
- there is no reason to suppose that regulators can produce a more optimal series of wholesale arrangements than the market itself. Payments between different players in the internet value chain will be a function of the benefits each player brings to the other – a product of demand and supply across complex platforms. These are far more challenging than existing voice interconnection arrangements which NRAs oversee. NRAs are unlikely ever to be able to obtain the information necessary to set prices, as they do with voice services today
- many of the issues in relation to IP-interconnection charges will only become relevant when usage-based charges at the retail level are more prevalent than they are today.
- there are still only limited signs of quality of service (QoS) differentiation in the market today. As we explain in other submissions relating to retail services, effective rules in relation to non-discrimination are more important than detailed rules on QoS. BEREC/NRAs will need to be particularly mindful of the need to ensure that vertically integrated operators are not able to discriminate in favour of their own upstream or downstream operations.

2. IP-interconnection – Key Issues

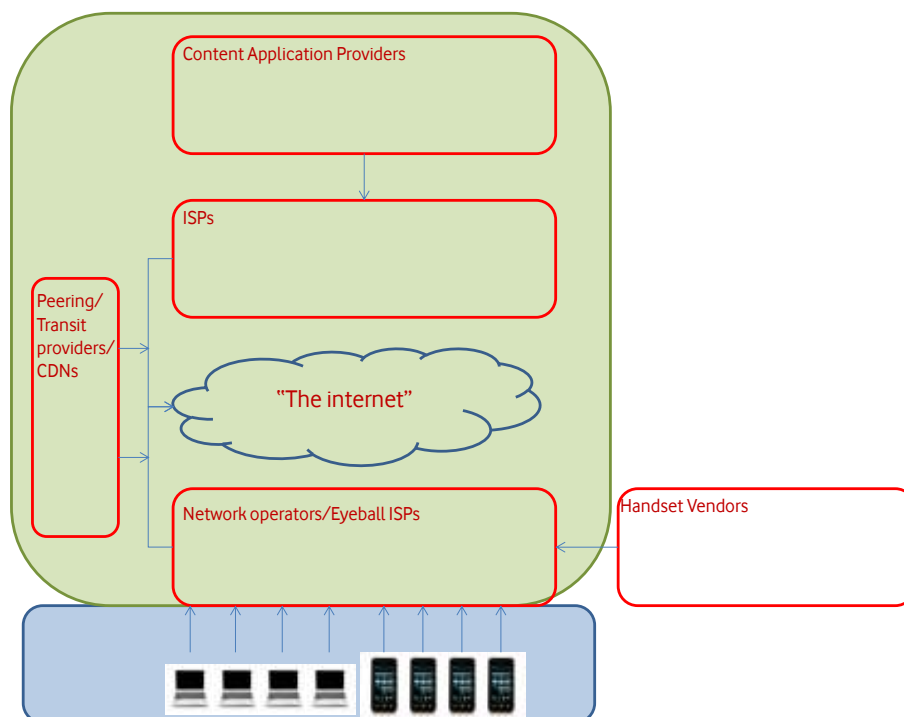
i. Current lack of market failure

Vodafone shares BEREC's view that the IP-interconnection market does not exhibit signs of market failure and at present should not be subject to *ex ante* regulation. BEREC's consultation document covers the main elements of the internet value chain that are currently within the framework of IP-interconnection – effectively from the Content Application Providers (CAPs) through to the end users. Within this framework, the main reasons why there is no market failure that requires *ex ante* intervention are:

- The availability of different methods of data transmission; transit, peering and Content Distribution Networks (CDNs)/caching limiting the potential for bottlenecks.
- The inability of either Internet Service Providers (ISPs) or Content Application Providers to deny access. This is because both ISPs and CAPs are likely to lose more than they gain if interconnection is refused.

There might be some cases at the margins where localised market power exists either at an ISP or CAP level. These are best dealt with either through dispute resolution mechanisms or *ex post* competition law.

To date market power – to the extent that it exists - has resided with network operators (or eyeball ISPs). This market power has dealt with through wholesale access obligations when there is insufficient competition at the retail level. These obligations are outside the scope of IP-interconnection as shown in the diagram below where the top shaded box (green) represents IP-interconnection and the bottom shaded box (blue) represents internet access:



Even though there is no case for regulatory intervention at present, NRAs and BEREC should remain open to the potential need to intervene in the future. The internet and its monetisation models are still works in progress and it is quite possible that the internet value chain will change considerably in the years

ahead. BEREC and NRAs should be open to the possibility that market power might exist at **any** level within the internet value chain.

Within the current framework of IP-interconnection there are three main potential sources of market power:

1. Eyeball ISPs demand excessive payments (and monopoly profits) from content providers in order to allow end users to access the content. This is most likely when an ISP provides access to the vast majority of a defined market and there is no possibility for end users to circumvent the constraints placed by the ISP.
2. CAPs demand excessive payments (and monopoly profits) from ISPs in order to access their content. This is most likely when a content provider has the monopoly for a certain type of content which is both unique and in high demand.
3. CDNs demand excessive payments (and monopoly profits) from ISPs and/or CAPs to utilise their services. This is most likely when a CDN has unique rights with respect to either a majority of ISPs or a majority of major content providers and the user experience is highly sensitive to the enhanced quality of service that CDNs can provide.

We believe that the most likely scenario for market power in the future is scenario 2. It could be argued that some CAPs already have market power. We do not believe scenario 1 is likely to materialise given the competitive nature of access markets in Europe and the work of BEREC and NRAs in ensuring sufficient competition at the retail level for fixed access services. We believe scenario 3 is a possibility given the growing popularity of certain services that rely on caching (e.g. Netflix), but it is still too early in the development of such services to identify any market failure and abuse that would justify *ex ante* intervention and barriers to entry into these markets appear low.

The use of bargaining power between players at different levels in the value chain and the consequent potential breakdown of trading are normal features of competitive markets. The current access regime may distort this – since (eyeball) ISPs have clear obligations under the Access Directive to provide connectivity to end users, but reciprocal obligations do not apply to CAPs to allow access to their content. This is not necessarily an argument for extending the existing access regime to content providers (as BT, for example, has recently proposed) but BEREC will need to monitor developments to ensure that current regulation does not inhibit effective bargaining along the value chain.

BEREC and NRAs should be particularly careful with respect to any negative consumer outcomes that might materialise as a result of operators either exercising market power or seeking to establish market power. In particular the near ubiquity of network and service interoperability cannot be guaranteed when network and service are separated. At the least, BEREC will wish to ensure that any to any connectivity is guaranteed for the main two-way communication services (voice and messaging).

ii. Different types of IP services

IP services encompass both content services and voice services. The main focus of the IP-interconnection debate at present is in relation to the interconnection between ISPs and CAPs for content-based services. For these services there are a number of different payments which fund the end to end cost of producing and accessing content. These include¹:

- Payments from end users to ISPs for network access

¹ For simplicity we do not include payments in relation to transit, peering or CDNs

- Payments from end users to CAPs for premium content
- Payments from CAPs to ISPs for hosting/IP services
- Payments from advertisers to CAPs

With no single direction of payments in relation to content services, and indeed with the direction of payments often changing over time there have been limited opportunities to generate market power and in general content-based services can be produced by anyone and accessed by everyone². This is clearly a good consumer outcome and would be jeopardised if an inflexible pricing regime is imposed as a result of regulatory intervention. Intervention could only be justified if the benefits of such regulation clearly outweigh the potential cost of interfering with market-determined outcomes.

Voice services

At present the majority of voice interconnection still occurs within legacy telecoms networks. Some over the top (OTT) voice application providers also provide services on number ranges on which a termination fee is payable by the calling network. This is reasonable as the nature of interconnection is akin to interconnection in legacy telecoms networks. There is currently no paid for interconnection regime between OTT providers, but this is due to the lack of interoperability rather than because an alternative regime has been proven to be better.

For the time being there is a distinction between core telephony services (fixed and mobile) and OTT services. As such, the economics of core telephony services which justify calling party pays are not necessarily present with respect to OTT services³ which are implicitly receiving party pays⁴.

It is not the aim of this paper to reproduce the extensive economic literature in relation to calling party pays v receiving party pays. In simple terms a calling party pays regime will yield a more optimal allocation of resources if consumers derive more value from making calls than receiving calls. As a result, if consumers have to pay for receiving calls they will typically be under-consumed (which in turn leads to under-consumption on the other side of the market). If consumers derive broadly the same value from making and receiving calls a receiving party pays regime will yield a more optimal allocation of resources.

In all European markets, a calling party pays regime has been established both for fixed and mobile voice services. Vodafone maintains that there is no case of an NRA concluding that a better consumer outcome will materialise if a receiving party pays regime is established⁵. Even though the technology that will be used for voice services will change in the coming years, there is no evidence that this will lead to a change in consumer preferences (and utilities) with respect to making and receiving calls.

We recognise that there might be practical difficulties in trying to set up a calling party pays regime for voice interconnection (without the same regime applying to data interconnection) especially given that the current internet-based service providers are free from the licensing and jurisdictional requirements placed on traditional network operators. Going forward it is possible that there will be a complete separation between network access and service provision and all voice services will be provided by OTT players (some of whom might also be network access providers). Under such a scenario it is likely that the EC and NRAs will conclude that OTT voice service providers can no longer be free from all licensing and

² Subject to local laws, e.g. decency, copyright etc.

³ For some OTT application providers you can only receive calls from contacts that have been approved. Therefore consumers are less likely to assign a low or zero value to some of the calls received.

⁴ Although where there are no data limits there is no incremental payment for receiving calls.

⁵ In the early days of mobile networks there were some examples of bill and keep for cross-network mobile to mobile calls, but these arrangements were all replaced with a calling network pays interconnection regime.

jurisdictional requirements. At this point some of the practical difficulties associated with establishing a calling party pays regime for VOIP interconnection might be removed. BEREC should be open to this possibility and monitor the development of the VOIP market to ensure consumer welfare is not compromised by unregulated OTT providers.

iii. Externalities

According to economic theory, optimal pricing will take into account the presence of externalities. In the case of traditional telephony, it has often been argued that access to the network should be subsidised (through higher call charges) to encourage more people to subscribe to the service. The subsidy seeks to align marginal personal benefit with marginal social benefit to bring the overall level of subscription to an optimal level. This externality is also referred to as the network effect.

In the case of internet access, the issue of externalities is more complicated because apart from the network effect that exists in relation to internet users communicating with each other (a same-side network effect), there is also a two-sided network effect whereby content producers benefit from more internet users and internet users benefit from more content producers. The exchange of payments within the value chain could be adjusted if there was clear evidence that the market outcome is inconsistent with the outcome that would occur if externality effects were reflected in the purchasing/usage behaviours of individuals.

The presence of externalities means the market cannot be relied upon to yield optimal outcomes without some form of regulatory intervention. However, within the context of IP-interconnection the value assessments of both sides of the market are likely to change in the years ahead. A change in how users perceive value will lead to a change in any optimal externality pricing adjustment. Any regulated pricing regime would need to have the foresight to take into account these changes.

BEREC/NRAs should adopt a wait and see approach and not try to implement a pricing regime for the future based on either the observed externalities today or the anticipated (but highly uncertain) externalities of the future.

iv. Importance of retail price structure

The importance of an appropriate wholesale pricing regime is less apparent in an environment where retail prices are set independently of usage. When data access is unlimited at the retail level (i.e. a flat fee provides unlimited data), it is harder to contemplate a wholesale regime that requires networks to compensate each other on a usage basis.

For mobile networks, data is rarely unlimited and end users generally pay for incremental usage. For fixed networks flat rate unlimited offers are more common but it is quite likely that this will change if and when network capacity limits are reached and the incremental cost of deploying extra capacity is above the incremental revenue that can be earned from that incremental capacity⁶.

Once usage charges/caps are introduced, internet access will become a scarce resource (in economic terms) which will be competed for. This competition should allow new wholesale pricing structures to be established. The market should be free to establish these new structures with BEREC and NRAs adopting

⁶ E.g. In the US, Comcast and Time Warner Cable have recently announced plans to implement data caps and incremental pricing when caps are breached.

a monitoring role to ensure that such developments do not compromise on non-discrimination principles and are for the benefit of consumers.

v. Future business models

When usage charges/usage caps at the retail level become more common, new and innovative charging regimes are likely to develop. If end users have no constraints on the incremental data they consume, there is no commercial incentive for any other party to contribute to the end users' cost of accessing content. When end-users are constrained and are faced with either data caps/ data charges on a per MB/GB basis the content market will start to function like any other two-sided market where both sides of the market can benefit from the actions of the other party. At this point pricing flexibility at both wholesale and retail levels should be encouraged to allow a better matching of utility/value (demand) and capacity (supply).

vi. Quality of Service

The BEREC paper briefly touches upon issues relating to Quality of Service (QoS) and different traffic classes for interconnection. Our main comments in relation to QoS are provided in response to the separate BEREC consultation on QoS. Vodafone believes that differentiated quality of service and implementation of traffic classes – both for end users and application providers - can be welfare enhancing. To date, there have been practical difficulties in implementing QoS, to some extent because the complexity and cost of implementation are greater than the cost of adding in extra capacity. This is especially the case in fixed networks.

In the presence of capacity constraints it is reasonable for network operators to engage in practices that seek to optimise the experiences of their customer base as a whole. This might mean limiting access to types of applications that are bandwidth heavy in order to provide consumers with the best overall browsing experience. In today's internet there is already a form of QoS through private networks. There is no question that the presence of these private networks and the additional quality they provide is beneficial for both users and providers alike. The same attitude should be adopted with respect to QoS and traffic management.

The key focus for BEREC should be to ensure that there is no discrimination anywhere along the value chain. There are numerous players who are integrated along the value chain and they should not be allowed to apply discriminatory QoS practices in favour of their own traffic/content vis-à-vis the traffic/content of their competitors.

As explained in the previous section, the future models for capacity charging are likely to change as the internet matures. BEREC should be open to these new business models – which might include price and quality differentiation - both at wholesale and retail levels. Price and quality differentiation, as long as they are also non-discriminatory, are expected to enhance welfare and encourage innovation.

3. The regulatory context for IP-interconnection

BEREC examines the possibility for imposing *ex ante* regulatory obligations under either SMP rules (Articles 8 and 12 of the Access Directive) or under the more general interconnect obligations of Article 5 of the Access Directive. Alternatively, NRAs can deal with complaints using their dispute resolution powers.

The current regulatory framework for *ex ante* regulation on a national market basis is ill-suited to the regulation of IP-interconnection. As BEREC points out, it will be extremely difficult to impose *ex ante* regulations either through SMP or the more general interconnect obligations. BEREC correctly notes that IP-interconnection is not currently one of the markets in the EC's list of markets assumed to be suitable for *ex ante* regulation. The EC is in the process of reviewing this list with a new recommendation on relevant markets expected in 2013. There is no expectation that the market for IP-interconnection will be included in the list. Therefore for the coming years, NRAs will have a high burden of proof if they attempt to impose *ex ante* regulatory obligations in the market for IP-interconnection through market analysis/SMP findings⁷.

As explained in this paper, the scope of IP-interconnection is wider than just dealing with monopoly bottlenecks associated with providing services to end-users. As such, the provisions of Article 5 of the Access Directive will not be sufficient to cover all the potential sources of market power that might materialise with respect to IP-interconnection. CAPs, in particular, will not have obligations to connect so that end users can obtain access to the content they host. This will require careful thought in the revision to the Framework and, in the meantime, it is likely that a mixture of dispute resolution and *ex post* competition law will be required to remedy any market failure.

⁷ In Poland UKE tried to find SMP on Telekomunikacje Polska on both IP-transit and IP-peering by defining them as two separate markets. The SMP findings were vetoed by the European Commission on the basis that the evidence provided by UKE did not support its finding of two separate markets.

4. Conclusion

BEREC is right to conclude that the IP-interconnection regime is currently working well in the absence of regulatory intervention. However, some key issues in relation to IP-interconnection will only begin to emerge in the coming years when the majority of voice traffic is conveyed over the internet and the usage behaviour of consumers is constrained either through periodic data limits or usage charges. BEREC must be ready to intervene if consumer outcomes are threatened.

BEREC should also ensure that its remit and the remit of NRAs is not limited to the traditional sources of market power. The internet value chain is highly dynamic and market power can emerge from a number of different sources. BEREC must be ready to ensure that no player within the internet value chain is able to abuse market power to the detriment of consumers.

The internet by definition works across national boundaries and it will be difficult for NRAs to regulate either CAPs or OTT providers that do not need a legal presence to provide services in a national market. The need to ensure key principles such as any-to-any voice/messaging interoperability and access to emergency services will require all service providers to operator under the auspices of NRAs (or a Europe-wide regulatory authority). This will alleviate some of the difficulties associated with both implementing alternative IP-interconnection regimes and regulating them.