

**BEREC Report of the public consultation on
BEREC Report on IP-Interconnection practices
in the Context of Net Neutrality**

5 October 2017

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1. Introduction

In 2012 BEREC published the report “An assessment of IP interconnection in the context of Net Neutrality”,¹ which concluded that the Internet ecosystem had managed to adapt IP interconnection arrangements to reflect changes in technology, in the (relative) market power of players, and in demand patterns and in business models, all without a need for regulatory intervention.

In November 2016 BEREC held the 3rd expert workshop in IP-interconnection in co-operation with the OECD² – bringing together members of academia, market experts and participants, as well as public authorities, including European NRAs, US and Mexican regulators (FCC and IFT respectively) as well as DG Competition. The insights gained at the workshop have informed the current project.

Based on this background, BEREC published the Report on IP-Interconnection practices in the Context of Net Neutrality for public consultation on 7 June 2017 and the consultation closed on 5 July.

The purpose of the public consultation was to increase transparency and to provide BEREC with valuable feedback from stakeholders. All stakeholders were invited to submit their contributions.

In total BEREC received **11 submissions** from the following stakeholders (in alphabetical order): Akamai, AT&T, Cable Europe, Cloudflare, Cogent Communications, DIGITALEUROPE, ECTA, Fédération FDN, GSMA / ETNO (joint response), LeaseWeb Network B.V. and Telefonica.

Part of one of the submissions was marked as confidential and BEREC took this into account.

BEREC welcomes and appreciates all stakeholder contributions. The contributions received will be published on the BEREC website³, except for confidential sections.

The objective of this consultation report is to provide a brief overview of the received contributions and to present BEREC’s opinion on them.

2. Submissions per stakeholder

2.1 Akamai Technologies

Akamai believes that the IP interconnection market is competitive and well-functioning, a result that it believes has been achieved without regulation. Akamai supports BEREC’s policy recommendations and believes that NRAs should refrain from imposing ex ante regulation on the IP interconnection market, since it considers that the market is competitive, generally functions well, and delivers a range of benefits to all participants in the Internet ecosystem. In

¹ BoR (12) 130, *An Assessment of IP interconnection in the context of Net Neutrality*, 6 December 2012 http://berec.europa.eu/eng/document_register/subject_matter/berec/reports/1130-an-assessment-of-ip-interconnection-in-the-context-of-net-neutrality

² BEREC expert workshop on IP-Interconnection in co-operation with the OECD, 21 November 2016. Further details are available at: http://berec.europa.eu/eng/events/berec_events_2016/139-berec-expert-workshop-on-ip-interconnection-in-co-operation-with-the-oecd

³ See www.berec.europa.eu

Akamai's view, the imposition of regulation where it is not needed could have significant unintended consequences, including the inhibition of innovation.

In Akamai's view, while public authorities may occasionally decide to intervene on specific interconnection disputes, this does not justify the imposition of ex ante regulation of IP interconnection more generally.

2.2 AT&T

AT&T supports the conclusions in BEREC's draft report. In particular, it believes that there is no present need for specific regulatory intervention and that monitoring of market practices is sufficient.

2.3 Cable Europe

Cable Europe believes there is no clear reason to intervene in the IP interconnection market, since it considers the market to be highly competitive and that net neutrality principles have been fully respected. Cable Europe believes that regulators should only act as a fall-back solution and this can be achieved with a robust monitoring process, as described in the report.

Cable Europe agrees with BEREC that collecting data from market players is crucial to assess the situation correctly and that transparency policies are important. It agrees with the assessment that "while it is possible to identify whether there is congestion", it is a much greater challenge to "unambiguously identify the location of that congestion". Cable Europe advises BEREC (and NRAs at the national level) to continue monitoring and updating the present report, while taking a holistic approach.

2.4 Cloudflare Ltd

Cloudflare believes that the Internet eco-system has proven to be resilient in coping well with traffic volumes, and believes that the lack of regulatory intervention has been instrumental in facilitating market growth.

Although Cloudflare believes there are roles for both peering and transit in the future, it expects that transit will gradually decline and, on a per-destination network basis, transit will be replaced with specific destination network peering as time progresses. In line with BEREC's findings, Cloudflare has engaged in both hand-shake peering deals and in commercial (or contractual) deals.

Cloudflare believes that the lack of regulatory intervention has been instrumental in facilitating market growth and supports a hands-off regulatory approach as being the most appropriate for this market. Cloudflare argues that although disputes can arise occasionally, commercial dealings are commonplace in the IP interconnection and peering market, and notes that there is a well-established, community framework for facilitating traffic flows and partnerships. Therefore Cloudflare emphasises the importance of a commercial framework.

Cloudflare believes there is a role for each type of IXP model (i.e. the commercial model, the membership model and the non-profit / community model), and therefore disagrees with the

alleged assumption stated in BEREC's draft Report that the non-profit IXP model has turned out to be the most efficient way for traffic exchange in Europe.

2.5 Cogent Communications

In Cogent's view, BEREC has taken "wrong logical turns at various levels", and the report lacks a global framework with which IP interconnection practices can be reviewed and analysed. Cogent therefore disagrees with the report's main findings and conclusions.

Cogent does not believe that competition, market forces and a balance of bargaining powers are sufficient to guarantee the absence of congestion. Cogent believes that BEREC findings are based on the wrong assumption that an alternative transit connection options always exists, whereas in reality the presence of a reseller (or paying peer) is not a valid logical alternative option, as its offer relies on the same Access Networks' technical and commercial monopoly.

With respect to the unit costs of delivering traffic, Cogent challenges BEREC's statement that it "sees no indications that this general trend has either stopped or even reversed" (page 8) since market participants have revealed publicly that the costs of delivering traffic to DTAG for example has risen by 30% last year alone, and that DTAG was only able to increase pricing because it had successfully managed to congest IP Interconnections and suppress transit as a valid alternative connectivity option.

Cogent argues that this is a sub-optimal outcome, and moreover that "if competition and market forces have not achieved the right result, this is precisely because BEREC and NRA's have, by weakening interconnection rights, failed to recognize and preserve Transit as a competitive weapon." To maintain the integrity of the transit alternative route, economic actors' independence and the internet's universal reachability, Cogent believes that BEREC should recognise that Access Networks should be required to either buy transit or peer simultaneously with all Tier 1 operators, with enough bandwidth capacity to allow traffic to flow uncongested to its final consumer destination.

When providing Internet access services, Cogent Communications claims that when providing Internet access services and to respect end users' right to use the Internet, access networks have an affirmative obligation to deliver global reachability and ubiquitous connectivity, that allows traffic to flow (a) uncongested, (b) without unnecessary delays and (c) to and from all Internet endpoints.

Cogent believes BEREC should emulate the FCC's 2015 position which recognizes that traffic is pulled by consumers and that the procurement of internet services to consumers includes naturally the obligation to procure uncongested connectivity to and from the Internet. In Cogent's view, American ISP can no longer refuse to upgrade IP Interconnection points and/or demand payments in exchange; as a result, the few months that followed FCC Open Internet order, witnesses the rapid disappearance of congestions and the signing of many peering agreements between major Access and Transit networks.

2.6 DIGITALEUROPE

DIGITALEUROPE believes there is no requirement for regulating the way networks are interconnected, since it considers that there is no market failure at this time. It considers that disputes are generally solved in the market without regulatory intervention and that National Regulatory Authorities (NRAs) should continue to monitor the sector.

DIGITALEUROPE supports BEREC's conclusion with regard to the importance of transparency: that users are aware of the interconnection policies pursued by their internet access providers and of the impact that this may have on the quality of service obtained from certain content providers, whose content requires a high bandwidth, such as video streaming.

2.7 ECTA

ECTA agrees that competition and transparency play prominent roles in net neutrality issues. Therefore, it suggests that when investigating traffic constraints, competent authorities should guarantee appropriate transparency towards parties involved, including consumers. More particularly, it suggests that the consequences of adopting specific IP interconnection practices for consumers should be clearly identified and made public.

Moreover, ECTA asks BEREC to explain how this initiative relates to the Net Neutrality Regulatory Assessment Methodology that is also currently under consultation and how IP interconnection practices might impact the measurement results.

Considering the fast evolution of the Internet ecosystem and the continued increase in traffic volumes, ECTA recommends that BEREC should publish reports on evolving IP interconnection practices on a more regular basis, for example, annually, but no less than every other year.

Finally, ECTA would welcome a more European centric approach for future reports.

2.8 Fédération FDN

Fédération FDN considers that the draft report lacked political vision, especially from the end-user point of view. Fédération FDN does not agree with a case by case approach to interconnection problems and would rather embrace all the cases under a systematic approach.

According to Fédération FDN NRAs must closely monitor IP interconnection practices and calls for strong and fast ex-post regulation rather than just applying a careful approach.

NRAs should continuously collect technical and financial data about IP interconnections and that monitoring should be performed only with aggregated data in order to ensure fundamental rights, such as privacy.

NRAs should share their experiences and monitoring methodologies in order to spread good practices and allow a more uniform approach when BEREC and the NRAs apply the Regulation.

Fédération FDN also expresses support for ITU's recommendations about promoting local IXPs and suggests BEREC and NRAs should promote IXPs and free peering in order to help prevent commercial disputes

2.9 Joint GSMA ETNO response

GSMA and ETNO believes that IP arrangements are highly dynamic and will continue to evolve competitively, driven by innovation in transport networks, price competition and continued investment in flexible forms of network capacity. They therefore support BEREC's recommendation that there is no need for specific regulatory intervention and that monitoring of market practices is sufficient.

GSMA and ETNO note the deployment of networks by CAPs and suggest that this is an element to take into account when considering issues relating to a 'level playing field'.

BEREC should not use or make references to measurements made by third and interested parties when such measurements are not made on behalf of an NRA and cannot be considered as a certified monitoring mechanism according to BEREC's net neutrality guidelines. Thus, the last paragraph of clause 6.1.3 should be removed from the final report.

2.10 LeaseWeb Network B.V.

LeaseWeb suggests that the draft report lacked relevant observations regarding traffic related costs for CDNs to serve OTT content/applications to consumers due to the practices of an increasing number of large access ISPs in Europe. LeaseWeb also notes that in many cases these large Access ISPs offer (typically video centric) services that compete with this OTT content.

This comment agrees that "competition and transparency for consumers remain key factors" and would welcome initiatives to deploy Pan-EU measurements and reports of effective speeds and quality between a variety of content sources and consumers. It also suggests that BEREC should publish reports on evolving IP interconnection practices on a more regular basis covering also the commercial elements (costs, pricing) of IP interconnection options.

LeaseWeb disagrees with the use of traffic ratios to determine if settlement free peering should be granted. It states that this was once established for global Tier 1 backbones (networks of similar nature) that were peering in multiple locations, in multiple regions to avoid one party having to carry much more traffic (and associated costs) on its global network than the other party. However, applying this to peering between access ISP and a CAP/CDN in one country is useless given that the customers of the access ISP pull content from the CAP/CDN (and both carry their share of costs and investments).

2.11 Telefonica

Telefonica agrees with the conclusion of the report that there is no need for specific regulatory intervention and that monitoring of market practices is sufficient. It also shares the view regarding how dynamic and competitive the market is.

However, Telefonica disagrees with the inclusion of the reference to Telefonica's performance in the Netflix ISP index in section 6.1.3, since it is not part of any action made by the NRA or by any other Spanish authority. Telefonica also refers to BEREC's NN Regulatory Assessment Methodology (BoR (17) 112), which indicates that measurements taken in a non-controlled environment are highly questionable, since there may be many factors beyond the ISP's control that affect measurement results.

3. Summary of responses table

	Support of BEREC's conclusions	Regulation required	More detailed monitoring of BEREC / NRAs required	BEREC to promote IXPs and free peering	Comments on BEREC's/NRA's methodology	Arguments relating IP-IC with net neutrality issues
Akamai	Supports BEREC's policy recommendations.	NRAs should refrain from imposing ex ante regulation. IP interconnection market is competitive and well-functioning,	/	/	/	/
AT&T	Shares conclusions in respect to the efficiency of market mechanisms.	No need for regulatory intervention.	Monitoring of market practices is sufficient.	/	/	/
Cable Europe	The conclusions from this assessment are perfectly in line with Cable Europe's one – “while it is possible to identify whether there is congestion, it poses a much greater challenge to unambiguously identify the location of that congestion”.	No reason to intervene in the IP interconnection “market”.	BEREC (and NRAs at the national level) should continue monitoring and updating the present report and have a holistic approach.	/	Collecting data from all market players is crucial to assess correctly and transparency policies are very important.	Net Neutrality principles have been fully respected which is a perfect example of self-regulation in practice.
Cloudflare	Comfortably agrees with the overall	The Internet eco-system has proven to be resilient in coping well with traffic	/	There is a place for both peering and transit, it is expected the use of transit to decline over	/	/

	conclusion drawn by BEREC.	volumes, and that the lack of regulatory intervention has been instrumental in facilitating market growth		time and to be replaced with specific destination network peering. There is a place for each type of IXP model and Cloudflare does not therefore necessarily agree that a non-profit model specifically has been the best model in Europe		
	Support of BEREC's conclusions	Regulation required	More detailed monitoring of BEREC / NRAs required	BEREC to promote IXPs and free peering	Comments on BEREC's/NRA's methodology	Arguments relating IP-IC with net neutrality issues
Cogent Communications	Cannot agree with the report's main findings and conclusions. Report takes wrong logical turns at various levels and generally lacks a global framework with which IP Interconnections practices need to be reviewed and analyzed	Cannot agree that competition, market forces and a balance of bargaining powers were sufficient incentives to lead to the disappearance of congestions. In USA it took regulatory intervention and the FCC clearly state that providing Broadband Access to end consumer implied the obligation to provide sufficient capacity at the IP interconnection level.	If competition and market forces have not achieved the right result, it is precisely because BEREC and NRA's have, by weakening interconnection rights, failed to recognize and preserve Transit as a competitive weapon.	Networks cannot be forced to peer or connect to an IEX or a CDN at any conditions. In fact, some Internet actors are refusing to peer and/or demanding extortionate connection fees. Peering is a one-to-one relationship that only delivers connectivity to a subset of the internet. Universal Connectivity through peering-only can be achieved as well, but would require peering connections with all other Tier1 providers.		Welcomes BEREC's acknowledgement "in its Guidelines on Net Neutrality that NRAs may take into account the interconnection policies and practices of ISPs in so far as they have the effect of limiting the exercise of end-user rights under Art.3(1) of the Regulation.

DIGITALEUROPE	Shares BEREC's conclusion that disputes are solved in the market without regulatory intervention and the importance of transparency.	Since there is no market failure at this time, there is no requirement for regulating the way networks are interconnected.	NRAs should continue to monitor the sector.	/	/	/
ECTA			When investigating traffic constraints, competent authorities should guarantee appropriate transparency towards parties involved and consumers.	BEREC should promote IXPs and free peering	Recommend BEREC to publish reports on evolving IP interconnection practices on a more regular basis. Reports should cover the commercial elements of IP interconnection options, with the objective to ensure whether there are impediments to competition and consumer choice	Support a competitive Internet ecosystem where end-to-end connectivity is unconstrained, free Internet access and usage for end users is safeguarded, without any gatekeeping by ISPs terminating traffic at end user equipment that might be in violation of interconnection principles, net neutrality regulation or competition law Asking for the relation between IP-interconnection and BEREC's NN Regulatory

						Assessment Methodology
	Support of BEREC's conclusions	Regulation required	More detailed monitoring of BEREC / NRAs required	BEREC to promote IXPs and free peering	Comments on BEREC's/NRA's methodology	Arguments relating IP-IC with net neutrality issues
Fédération FDN	Report lack a political vision of the interconnection matter, especially from the end-user point of view.	Recommends a strong and fast ex-post regulation: as soon as a discriminating interconnection problem occurs, the relevant NRA must consider the situation as soon as possible.	NRAs must closely monitor IP interconnection practices and be strong when they decide whether regulatory intervention is actually warranted, instead of just applying a careful approach. NRAs' purpose, as independent regulatory authorities, is to monitor the IAPs and impose remedies, including penalties when necessary.	NRAs should study these potential infringements to users' rights and limit this practice in favor to Internet eXchange Points (IXP) and free peering. BEREC and NRAs should promote IXPs and free peering as background actions preventing later commercial disputes.	It is important to also have a strong methodology and to present it. Putting in the same report data that were not produced the same way across NRAs may bias the analysis if the methods are not mentioned, when comparing the data. NRAs must share their regulation experiences and monitoring methodologies.	/
GSMA / ETNO	Share BEREC's conclusions in respect to the competitiveness of market mechanisms.	Fully support BEREC's view that where dispute arise these can be resolved without regulatory intervention.	Monitoring of market practices is sufficient.	The use of paid peering increases, Transit will not become obsolete. Economic trade-offs between peering and transit arrangement exists and competitive pressure will	Suggestion not to use not to make references to measurements made by third and interested parties	/

				continue to force flexible response driven by economic factors.	when such measurements are not made on behalf of NRA.	
LeaseWeb Network B.V	Agrees with the comment that “competition and transparency for consumers remain key factors” and would welcome initiatives to deploy Pan-EU measurements and reports of effective speeds and quality between a variety of content sources and consumers.	/	/	The justification to use traffic ratio's to determine if settlement free peering should be granted is completely flawed. Such a guideline once was established for global Tier 1 backbones that were peering in multiple locations in multiple regions – to avoid that one party had to carry much more traffic (and associated costs) on its global network than the other party. To apply the same guideline for peering between Access ISP and a CAP/CDN in one country is useless given that by definition the customers of the Access ISP pull content from the CAP/CDN (and both carry their share of costs and investments).	Recommend BEREC to publish reports on evolving IP interconnection practices on a more regular basis.	/
	Support of BEREC's conclusions	Regulation required	More detailed monitoring of BEREC / NRAs required	BEREC to promote IXPs and free peering	Comments on BEREC's/NRA's methodology	Arguments relating IP-IC with net neutrality issues
Telefonica	Share global conclusions with BEREC.	No need for regulatory Intervention.	Monitoring of market practices is sufficient.	/	Measurements taken in a non-controlled environment are highly questionable as	/

					<p>there are many different factors out of the ISP control that do affects any measurement result. Cannot understand how the measurements made by an interested party</p> <p>with a proprietary and non-certified system have been taken as fully reliable and included in the</p> <p>report</p>	
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4. Conclusions

The **majority** of comments **support** BERECs conclusions, either generally or on specific points (*Akamai, AT&T, Cable Europe, Cloudflare, Digitaleurope, GSMA/ETNO, Telefonica*). Comments relate to different issues, such as the competitiveness of markets, the importance of transit, the expectation that transit is declining over time, and the practical difficulty of identifying the location of responsibility for congestion. Those comments that are **critical**, point out that transit is not always available as a default option and refer to the risk of an exploitation of the termination bottleneck or call for monitoring activities by NRAs enabling them to act where necessary.

In a few cases stakeholders seem to **over- or misinterpret** BEREC's positions or statements (*AT&T, Cogent, Cloudflare, GSMA/ETNO*). BEREC does not claim that market mechanisms are *always* sufficient or regulation is *never* necessary. BEREC rather stresses the importance of market forces and competition, noting that "*disputes have been solved in the market without regulatory intervention*", without asserting that this will necessarily always be the case. BEREC recommends ongoing monitoring but also a cautious approach when considering whether intervention is warranted in future. More specifically, BEREC did not conclude that the market growth it observes is the *result* from the lack of regulation.

Several comments referred to the **monitoring** of interconnection markets and practices, but from different perspectives. For some (*AT&T, Digitaleurope, Cable Europe, GSMA/ETNO, Telefonica*), monitoring is considered sufficient to secure the competitive operation of the IP-IC market. For others (*ECTA, FFDN, Leaseweb*) monitoring is rather viewed as a requirement which would also position NRAs to identify issues and respond if necessary. These comments recommended BEREC to publish IP interconnection reports on a regular basis (*ECTA*) and called for a consistent monitoring methodology across NRAs. Again, BEREC considers that it is **important to monitor** market developments closely. However, this does not imply there is a need for regulatory intervention.

Another contribution (*ECTA*) addressed the relation between BEREC's IP interconnection report and **BEREC's net neutrality Regulatory Assessment Methodology**⁴. With this latter project BEREC aims at specifying measurement tools to assess the quality of individual internet access services of customers. Thus, end-to-end communication is measured. Gathering information on the interconnection topology would be a different issue requiring a different measurement approach.

Another respondent (*Cogent*) asserts that eyeball ISPs can actually exploit their termination bottleneck ("*unavoidable termination monopolies*") and disagrees with BEREC's conclusions. That comment considers it a "*wrong assumption [to assume] that an alternative transit option always exists*".

BEREC clarifies that the availability of transit and its substitutability with peering is one of *several* factors relevant for the assessment of a competitive bottleneck (see. Ch. 4.2). The availability and pricing of transit might be expected to constrain negotiations over the settlement basis of peering agreements. However, transit's ability to substitute for peering may be less clear in case of video streaming, where demand for capacity is very large and a high

⁴http://berec.europa.eu/eng/document_register/subject_matter/berec/public_consultations/7093-draft-net-neutrality-regulatory-assessment-methodology

quality is required. Other relevant factors are retail competition and switching, CAPs', CDNs' and transit providers' countervailing power in negotiations with internet access service providers. However, these factors are predicated on conditions which may not always hold (e.g. availability of alternative transit routes, ease of consumer switching, etc). Broadly, to date NRAs have found that factors like the above do mitigate potential concerns. It should be noted, however, that NRAs' conclusions apply mainly to their respective national markets and caution should be exercised when considering wider implications. In case a complaint is addressed to the NRA the case has to be carefully assessed based on the specifics of the individual case.

Thus, BEREC concludes that NRAs should consider monitoring developments and not rule out potential interventions if this is merited in future. If they have relevant powers NRAs may wish to collect data on interconnection markets, for example covering the role of transit and peering and the extent of paid peering thereby enhancing transparency.