

# IP-Interconnection Practices in the Context of Net Neutrality

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BITS Seminar „Internet & IP-Peering“ (Brussels, Feb. 2, 2017)

## **BEREC work on IP-interconnection have a long history: *early period 2007-2010***

- Focused on voice interconnection in view of migration of PSTN networks towards IP-networks: “*Report on IP Interconnection*” (ERG (07) 09).
- Puzzle: While both – voice and data traffic – are transported across the same access bottleneck
  - voice termination is subject to ex-ante cost regulation on each access network while
  - IP-interconnection is largely unregulated.
- Why? Difference in charging mechanism:
  - Calling network party pays giving rise to a termination monopoly for voice
  - Peering/Transit in the core networks and Bill and Keep (BaK) on the access leg.
- In 2010 we concluded that a migration of charging mechanism toward BaK for voice is promising in the long run (however subject to some conditions).
  - “*BEREC Common Statement on Next Generation Future Charging Mechanisms / Long Term Termination Issues*” (BoR (10) 24 Rev 1)\*

## BEREC Expert Workshops in co-operation with OECD

- 3rd BEREC/OECD Workshop 21 November 2016 Brussels
  - agenda, report on outcomes (BoR (16)243), presentations, session video streams: [http://berec.europa.eu/eng/events/berec\\_events\\_2016/139-berec-expert-workshop-on-ip-interconnection-in-co-operation-with-the-oecd](http://berec.europa.eu/eng/events/berec_events_2016/139-berec-expert-workshop-on-ip-interconnection-in-co-operation-with-the-oecd)
  - previous BEREC/OECD workshops in Nov. 2011 and June 2012.
  
- Goal: to bring experts from the IP-IC community in contact with experts from NRAs
  - broad expertise: members of academia, market experts/participants, European NRAs, FCC, Mexican Regulator, the Commission
  - to discuss future IP-IC in the light of recent market development and legislative initiatives (EU Regulation 2015/2120, FCC's Open Internet Order).

## A short glimpse at the BEREC/OECD workshop

- Keynote session: Bill Woodcock (Packet Clearing House)  
*“Trends in IP-interconnection 2016: Update of survey first conducted in 2011”*
- Major findings:
  - 99.9 % of peering agreements are informal/handshake basis (up from 99.5 % in 2011).
  - Growth of multilateral peering agreements, both in number of agreements and size of each agreement.
- Panel sessions:
  - Measuring performance in Internet interconnection (M-Lab, Internet Neutral Exchange Association, Oxera, OECD): focus on identification of problems in the network.
  - Industry viewpoints on Internet traffic exchange (PCH, Google, AT&T, Akamai, DT, Cloudflare, Netflix): focus on market developments.
  - Public authorities approach to IP interconnection (FCC, NRA Mexico, ARECP, ACM, EC): focus on disputes.

**Essence of the workshop: IP-IC developments over the past years seem to rather reflect *evolution than revolution*.**

## **BEREC's 2012 Report: “*An assessment of IP-interconnection in the context of net neutrality*”<sup>\*</sup> (I)**

- Main findings:
  - A violation of net neutrality was considered unlikely if all traffic is treated according to the best effort principle.
  - The best effort principle is reflected in today's interconnection agreements across IP-networks taking the form of transit and peering agreements.
  - The Internet ecosystem has **managed to adapt IP interconnection arrangements** to reflect (inter alia) changes in technology, changes in (relative) market power of players, demand patterns and business models.
  - Both sides, Content and Application Providers (CAPs) as well as Content and Application Users, contribute to pay for Internet connectivity (→ **no free riding**).

<sup>\*</sup> BoR (12) 130: [www.berec.europa.eu](http://www.berec.europa.eu)

## BEREC's 2012 Report (II)

- Whether an ISP can exploit the physical bottleneck for traffic depends on
  - whether the **charging mechanism** entitles the ISP to a payment at the wholesale level out of its monopoly position and
  - the degree of **competition** at the retail level.
- Current Regulatory Framework foresees that NRAs can impose an obligation to interconnect on a non-discriminatory bases (Art. 5 AD)
  - however it does not provide a legal basis for mandating free peering.
- **Market has developed very well** without any significant regulatory intervention.
- Disruptions at the IC level have been few and have been solved in a relatively short time without any significant regulatory intervention – also due to competitive pressure of end-users at the retail level.
- **Constant change** is the constant factor (e.g. new types of players or IC arrangements).
- Any measure could potentially be harmful, so it should be carefully considered.

## World Conference on International Telecommunications 2012 (WCIT) in Dubai

- *“BEREC’s comments on the ETNO proposal for ITU/WCIT or similar initiatives along these lines”\**
- BEREC commented on a proposal by ETNO to include an explicit reference to a specific interconnection charging method used (sending party network pays and end-to-end quality of service delivery):
  - Could shift balance of negotiating level between market participants.
  - Could induce abuse of termination monopoly.
- Widespread adoption of connection based products on the global Internet could unravel benefits of connection-less packet switched networks based on decentralisation and simplicity.
- Protect the continued development of the open, dynamics and global Internet.

## What has happened since 2012? Typical disputes

- Disputes in the past with **mutual recriminations** (e.g. Netflix vs Comcast).
- CAPs accuse eyeball ISPs for causing congestion by refusing to upgrade port capacities or even slowing down content.
- Eyeball ISPs refer to growing traffic asymmetries and accuse CAPs for causing congestion by sending traffic via certain routes.
  - Ask for paid peering
- Underlying question: **who depends more on whom** (CAPs on eyeball ISPs or vice versa)?
- Again, such disputes were typically solved in the market.
- Often, market players did not submit their cases to the NRAs.
  - *Just a storm in a teapot?*



## ***“BEREC Guidelines on the Implementation by National Regulators of European Net Neutrality Rules”\****

- Focus of the Regulation is on internet access services provided to end-users.
- With regard to IP-interconnection it is clarified that the EU-Regulation 2015/2120 in its Art. 3 (3) concerns equal treatment of all traffic “*when providing internet access service*” and therefore excludes IP interconnection practices from its scope.
- However it is acknowledged 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
  - e.g. if interconnection is implemented in a way which seeks to circumvent the Regulation.

## BEREC activities on IP-interconnection in 2017

- BEREC will take a fresh look at IP interconnection issues:
  - What are recent technical and commercial evolutions?
    - e.g. is there a trend towards more paid peering?
    - are there more direct peerings between CAPs and IAS providers?
  - BEREC will put the findings of its 2012 Report to the test:
    - do they still hold?
    - or are they no longer valid due to new developments?
  - National NRAs' activities since 2012