

Net Neutrality in Europe: overview and challenges

NN Debate, Lisbon, 12 May 2015

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Technical overview and challenges

Internet key characteristics: the Internet Model

The Internet is successful in large part due to its unique model of development and deployment:

- Shared global ownership- no central control
- Open technical standards
- Collaborative Engagement models- researchers, business, civil society, academia, government
- Freely accessible processes for technology and policy deployment
- Transparent and collaborative governance

Internet key characteristics

- An network of network (inter-network) designed to pass standardized packets of data
- The Internet does **not** care what is in the packets
- **Best-effort** transport between and within networks (and btw it worked quite well so far!)
- Openness allows
 - innovation in application and services (‘**innovation without permission**’)
 - rapid growth and distributed coordination (without central control)

« Network Neutrality »

- *Network Neutrality*: broad term - no clear definition (free expression, user choice, traffic management, pricing, discrimination, etc.) => **How to preserve the Open Internet**

- **Increasing demand** for Internet connections with greater bandwidth

- More pressure on network capacity, hence greater deployment and use of **congestion** management and traffic shaping

- **Is traffic management** (i.e. ability to treat packets differently) a **threat** to the open architecture of the Internet?

Key technical challenge #1: Traffic Management

- Traffic management is a **normal part** of every day network operation and network management
- It is needed to ensure that all subscribers are able to obtain adequate service, esp. at peak time (congestion is a ‘natural’ consequence of the Internet’s design)...

but

- Should remain protocol or application neutral
- Should not be used as a tool for anticompetitive behaviour
- Should be transparent
- ...and should not be considered as a panacea (**adding capacity** to networks is also critical to alleviating congestion!)

Key technical challenge #2: Same understanding?

Internet service:

Connection of an Internet endpoint or network to the rest of the Internet with non-discriminatory, best-effort routing of data packets as part of the Internet.

- Non-discriminatory by definition
- Networks should simply move the bits along the wire
- Can include application-agnostic congestion management, for example, or traffic management to maintain network resilience

IP-based services (Specialized services)

***IP-based services* are: services that are built using the Internet Protocol, but that operate within a restricted set of networks, or only one network.**

- Often optimized for a single service or service type, and rely on a single administrative domain controlling the network in order to ensure (or enforce) specific service characteristics.
- Examples of IP-based services include video delivery and some communications service offerings (such as voice over broadband).

Internet-based services and applications

***Internet-based services and applications* are: services and applications that are delivered over or made possible by the Internet service direct to end-users.**

- *Do not* rely on administrative control from the network.
- *Do* rely on the underlying Internet service conforming to standardized best practices and non-invasive network management techniques.
- **Skype** is an example of an Internet-based online communications application.

Key technical challenge #3: Specialized services and the Internet

Risk? quality degradation of the normal/best effort Internet. So delivering Spec. Services over infrastructure shared with Internet services shld imply:

1.Operators to supply information on the average speeds of the Internet, data volumes limitations and traffic management practice

2.Monitoring by NRAs

3. An opportunity for operators to comment on the methodologies and findings of monitoring activities to help refine or refute the results

***Policy/Regulatory* overview and challenges in Europe**

EU Commission Draft Regulation (September 13, 2013)

- **Principles:**

« End-users shall be free to access and distribute information and content, run applications and use services of their choice »

- **Prohibition** « of blocking, slowing down, degrading or discriminating against specific content, applications or services »

- With some **exceptions** (Legal order or court order; Network integrity and security; Combat of spam; Minimising congestion)

- Introduce explicitly « **Specialized services** » (Providers of content (...) and providers of electronic communications (...) shall be free to enter into agreements with each other to transmit the related data volume or traffic as specialised services with a defined quality of services or dedicated capacity)

European Parliament Plenary vote (April 3, 2014)

1. Definition of NN in a binding act (« the right –vs *the freedom*- for end users to access and distribute information and content of their choice from a terminal of their choice »)

2. Stricter definition of specialised services- conditions:

1. Network capacity is sufficient to provide them in addition to Internet access services
2. They are not to the detriment of the availability or quality of Internet access services
3. Providers of Internet access to end users **shall not discriminate between functionally equivalent services and applications**

European Parliament vote (2)

3. Traffic management:

-Broaden traffic management: allow operators to « prevent and mitigate » the effects of congestion (vs. « minimise »them)

-Limit traffic management: it could only be applied in case of « temporary and exceptional » network congestion (vs. *Temporary or exceptional congestion*)

4. Quality of services:

•complaint procedures for users wrt open Internet and traffic management

•Right for NRAs to impose minimum QoS levels and other QoS parameters, beyond minimum QoS.

•Annual report from NRAs to EU Commission and BEREC on compliance of NN and effect of Specialised services on cultural diversity and innovation

BEREC Report on « Monitoring quality of Internet access services in the context of net neutrality » (8 March 2014)

- **Multiple references to the importance of IETF**
- **Recommends that NRAs increasingly put emphasis on evaluating performance of IAS as a whole, to assess potential degradation due to specialised services**
- **Recommends to monitor quality of connectivity to diverse destinations, not just popular ones.**
- **greater co-operation between European regulators on the subject of building a trans-border measurement system**
- **greater involvement with IETF as a source of technical expertise, metrics and frameworks for a common measurement platform**

Council of Ministers & European Commission

- Institutional process (Trialogue/Role of EC)
- Latest compromise proposals reiterate that specialised services (now referred to as “individual services”) can only be provided if the availability or quality of the Internet access service is not impaired and if they are not marketed as a substitute for normal Internet access.
- Council sources indicated that relations between the negotiators seem very **tense**. The dossier would probably be passed on to the Luxembourg Presidency which starts on 1 July.

Key challenges for Policymakers and regulators in Europe

#1 Keep ensuring **effective competition**

#2 Influence of other debates, in particular US/FCC

#3 New technical and commercial agreements/**new** offers to end-users (Paid peerings; Zero-rating; Internet.org; etc.)

#4 Different regulatory responses => threat of **fragmentation** in EU

#1 Keep ensuring effective competition

...but it might not solve everything, hence:

- Enabling the users to make **an informed choice** (i.e. Clear information on limitations and traffic management practices that the subscriber is subject to)
- **Reasonable network management**, neither anti-competitive nor prejudicial
- Share common terminology of **Internet** service
- and very pragmatically, **monitoring Internet services**

#2 Other Influence: US Debate

EU/US Two very different market places

- US consumer choice is limited
- Duopoly: Fixed BB through a cable TV or a Telecom Provider

⇒**US: Network/Platform Competition**

⇒**EU: Service competition**

EU/US Two very different regulatory environment

- Telecom services (regulated) and Information services (few obligations).
- EU: Competitive based Ex-ante approach of e-communications networks and services

US Recent Policy development (26 February 2015)

- **Reclassify BB Internet access services as Title II Communications Act services (Telecoms)**
 - **Bright Lines rules: No blocking; no throttling, No paid prioritization**
 - Apply to Cable, DSL and fibers as well as to Mobile BB Networks (retail only)
 - No ban on data caps and silent on zero rating
 - Reasonable Network Management
 - Specialized services: not allowed to undermine the effectiveness of the Open Internet rules. Transparency on those data services.
 - Interconnection: FCC to hear complains and take enforcement if necessary

- **Unintended consequences? (Internet covered by telecoms rules?)**

#3 New Economic & Commercial developments

Paid prioritisation/Fast lanes

- Commonly involve extending guaranteed paths all the way to the end subscriber (vs. Best effort Internet Service – no guaranteed QoS- which is adequate for most needs most of the time...)
- Moving Internet end points closer together reduces communications latency and increase share of bandwidth available.
- Hard to distinguish between **peering**, **paid peering**, **CDN services** and **paid prioritisation** if one just looks at the outcomes
- **Key** is open access to the market for these kinds of services (in tandem with a competitive market for Internet access provision)

Zero Rating

- « positive price discrimination »/ « Sponsored data »
- Comes in various forms
 - bundling service subscription with mobile subscription;
 - discounting service traffic against monthly data cap;
 - Free access (no data charges) to certain services eg. Internet.org

Free access/no data charges (« Internet.org »)

Someone covers the costs of the ultimate consumer data charges *and* the parts of the Internet available are limited and pre-determined by those who cover the costs

- Better limited access than no access at all?**
- Carriers can charge content providers**
- Many concerns: Limited inclusion, short term view, broadening the digital gap, Confusion with the Global Internet, a world of walled gardens and gatekeepers, risks for privacy, stifle economic development and innovation ...**

#4 Different National Regulatory developments

Slovenia, The Netherlands, Peru, Chile, Norway and few others prohibit Fixed and Mobile operators from blocking, throttling and charging special access fees for Content or applications

But in different ways:

- **NDL:** NN rules only apply to services & Apps offered via the Public Internet (IPTV, specialized services out of the scope)
- **Brazil's** Marco Civil da Internet: exception for national emergencies
- **Peru** allows traffic shaping after approval from regulator
- **Scandinavian countries:** self regulatory measures.
- And **Norway** allows specialized services only if they are separated from Internet Services and commitment to up-grade both services.

...Including on Zero Rating

Canada: Zero rating as a threat to the Open Internet (CRTC vs. BellMobility which zero-rated **its own Bell Mobile TV**)

NDL & Slovenia: Banned carriers from zero-rating partners services as eg. HBO and Deezer (**not the carriers own services**) and KPN caught for blocking some VoIP services on its free Wi-Fi hotspots.

Chile & Norway: Banned Mobile operators from offering Twitter and FB for free

Recent Study (*Allot Coms*): « **half of mobile carriers around the world** are zero-rating certain traffic, most frequently FB ».

Conclusion

- Improvement in common understanding, still a very polarized debate though...but what are we talking about? NN or Competition? Internet or data services?
- Importance of Regulators
- Unknwon impact of new services or new agreements on the Best Effort Internet
- .. .Most importantly let's focus on the [desired outcome](#):
 1. Open Internet
 2. Access/Choice/Transparency
 3. Users expect an Internet in which traffic is conveyed on a manner that is agnostic to source, content and destination