

Net Neutrality

Todd Daubert

November 10, 2015

What Is Net Neutrality?

- The principle of "Net Neutrality" can mean different things to different people
- Net Neutrality (or Open Internet) generally refers to the principle that Internet Service Providers (ISPs) should give consumers access to all legal content and applications on an equal basis, without favouring some sources or blocking others
- At first glance, this principle appears to be so obviously good that every well-intentioned person and company should support its application around the world
- Upon further consideration, no realistic and informed person or company would want the principle to be applied strictly anywhere in the world

So What Is the Problem With Net Neutrality?

- The problem with Net Neutrality is that the principle typically is defined as an affirmative general right when the goal for most people is to stop specific types of bad behaviour
- The targeted bad behaviours are hard to encapsulate with a single, pithy principle, which is why public debate typically focuses instead on consumer rights.
- Indeed, violations of Net Neutrality have become the hard-core porn of the Internet Age:

"I shall not today attempt further to define the kinds of material I understand to be embraced within [the] shorthand description ["hard-core pornography"], and perhaps I could never succeed in intelligibly doing so. ***But I know it when I see it . . .***"

United States Supreme Court Justice Potter Stewart, concurring in **Jacobellis v. Ohio**, 378 U.S. at 197 (1964) (emphasis added).

- Just as one person's art is another person's obscenity, debates about what constitutes a violation of the principle of Net Neutrality can become fervent and heated.

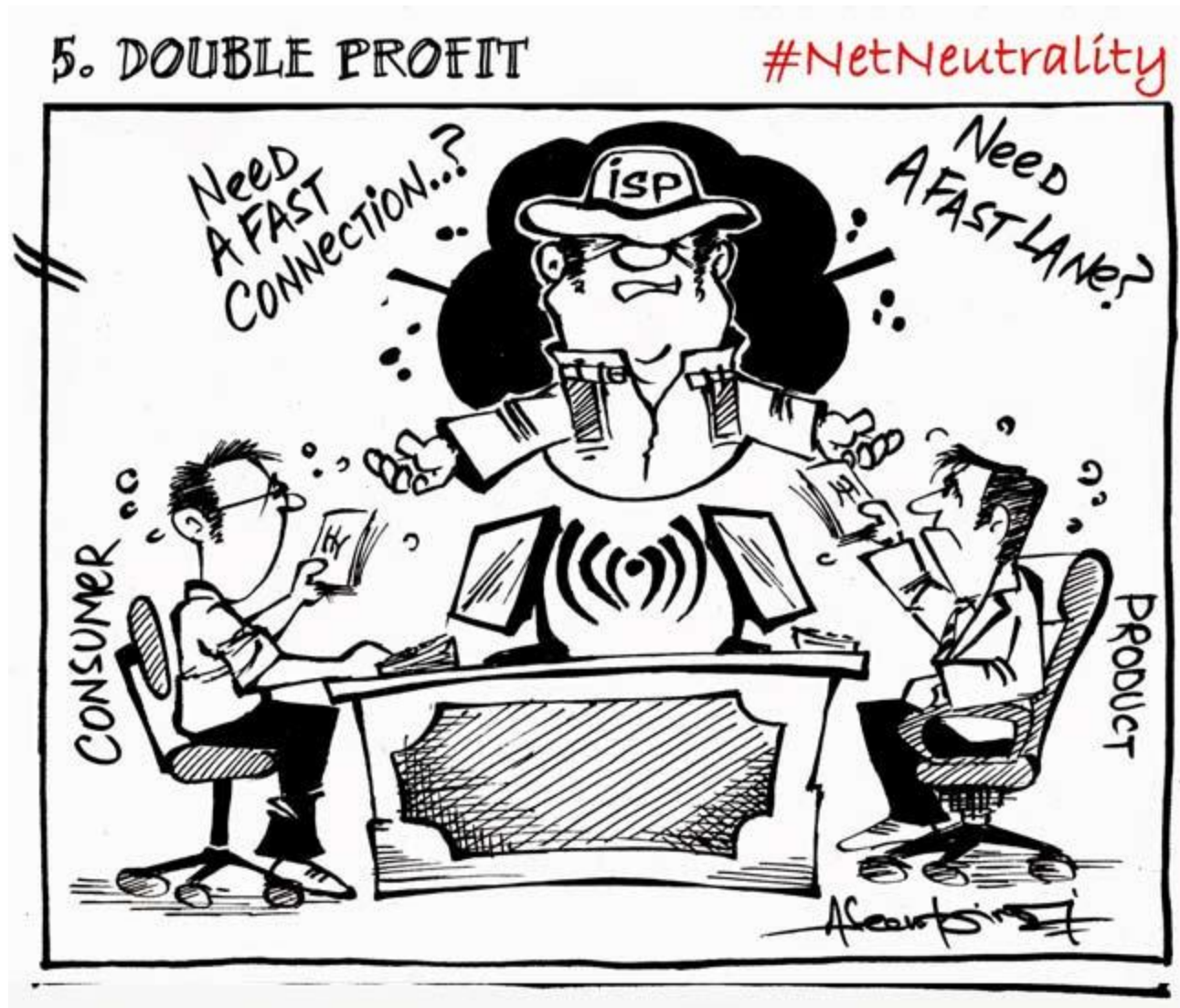
Why Is the Net Neutrality Debate Inevitable?

- ISPs ***must manage*** traffic over the Internet, or the services and applications upon which we rely would not function reliably
- However, ISPs are technically capable of managing the flow of web traffic from content providers to consumers, and prioritize traffic between users, in ways that are not always transparent or easily detectable by consumers (and regulators)
- Also, each ISP has a monopoly with respect to its own subscribers (aka the "bottleneck")
- As such, ISPs could manipulate traffic in ways that are anticompetitive or counter-productive to greater societal goals
- The impact of the Internet and related services and applications is, and for the foreseeable future will remain, pervasive, affecting the lives of nearly everyone, including those who do not use the Internet themselves
- Accordingly, the public must make important decisions about acceptable behaviours by ISPs and other persons or entities that control bottlenecks for individuals using the Internet and Internet-based services and applications
- These decisions lead to heated debates about the proper balancing of goals

Why do the Net Neutrality Debates Matter?

- Net Neutrality impacts many important issues:
 - Technological Efficiency -- Maximizing the Benefits of Internet-based Technologies
 - Telehealth
 - Education
 - Employment
 - Car Connectivity and Transportation
 - Banking
 - The Digital Divide
 - Freedom of the Press and Academia
 - Democracy and the right to Protest
 - The Digital Economy
 - Silicon Valley
 - National Security
- Even when there is agreement about the goals, disagreement about who decides how to reach the goals (and how violations are policed and punished) can be fierce

What does a bottleneck look like?



What Are Some of the Economic Consequences of Net Neutrality?

% change in Netflix download speed since Jan. 2013, by I.S.P.



SOURCE: Netflix

GRAPHIC: The Washington Post. Published April 24, 2014

Should All Packets Be Treated as if they Are Equal?

- Which content is more important at any given moment?
 - A message reporting terrorist activity?
 - A debate about whether Eden Hazard will remain at Chelsea?
 - A work-related email?
 - A press story about kidnapping and murder by the government?
 - A message to help a student with homework?
 - A reminder to your family about how much you love them?
 - Your selfie?
 - An urgent health-related message?
 - A sext to your crush?
 - Child pornography (or any other unlawful content)?
 - ISIS recruitment messages?
- If some packets are more important than others, who gets to decide which packets should be prioritized and which packets should be blocked?
 - The government (and if so, whose government)?
 - The ISP?
 - The Subscriber?
 - The Message Sender?
 - The Message Recipient?
- What principle should be applied to make prioritization and blocking decisions?

Do You Still Think All Packets Should Be Equal?



Should All Services/Applications Be Treated as if They Are Equal?

- Which service or application is more important at any given moment?
 - Remote Digital High-Definition Video Surgery?
 - Email?
 - Netflix?
 - Snapchat?
 - Tinder?
 - Remote Learning?
 - Transportation/Critical Infrastructure Management?
 - Facetime with Loved Ones?
 - Video News Reports?
 - Text News Reports?
 - Silk Road?
- If some services or applications are more important than others, who gets to decide which should be prioritized and which should be blocked?
 - The government (and if so, whose government)?
 - The ISP?
 - The Subscriber?
 - The Message Sender?
 - The Message Recipient?
- What principle should be applied to make prioritization and blocking decisions?

Should All Users Be Treated as if They Are Equal?

- Which user is more important at any given moment?
 - The Government (The Majority Party or Minority Parties)?
 - Dissenters?
 - Aung San Suu Kyi (Burma)?
 - The Occupy Movement (US)?
 - The Black Lives Matter Movement (US)?
 - The Muslim Brotherhood (Egypt)?
 - ISIS?
 - First Responders (e.g., Police, Firefighters, Ambulances)?
 - Businesses (e.g., the established and well-known company -- Facebook -- or the startup that nobody knows today but that could change the world tomorrow)?
 - Schools?
 - Hospitals?
 - Individuals?
 - The poor user of free Internet
 - The user who is willing and able to pay for higher bandwidth and faster service
- If some users are more important than others, who gets to decide which users should be prioritized and which users should be blocked?
 - The government (and if so, whose government)?
 - The ISP?
 - The Subscriber?
 - The Message Sender?
 - The Message Recipient?

Deep-dive

The United States and Canada

US

The Open Internet Order

- The FCC's Open Internet Order (the "Order"), adopted on February 26, 2015, and released on Wednesday, March 12, 2015, represents the third time that the FCC has tried to adopt Net Neutrality rules
- The Order relies on a new theory for its legal authority to adopt the rules, which are intended to eliminate the threat to an open Internet, promote innovation, and encourage investment in broadband
- The Order announces the **reclassification** of Broadband Internet Access Service from a **Title I Information Service** to a **Title II Telecommunications Service**, and presents a significant change to regulation of Internet Service Providers ("ISPs")
 - Reclassification: Broadband Internet Access Services became subject to Title II's strict common carrier regulations
- Reclassification and the new regulations mean new considerations, benefits, and obstacles for service providers, edge providers, and end users
- The Order is being appealed to the same court that struck down the previous two versions of the FCC's Net Neutrality Rules (Judge Tatel is again on the panel)

US

What does reclassification really mean?



US

The Open Internet Order

- The Order introduced three specific restrictions meant to eliminate practices that harm the Open Internet:
 - **No Blocking**
 - Broadband providers cannot block lawful content, applications, services, or non-harmful devices, subject to reasonable network management.
 - **No Throttling**
 - Broadband providers cannot impair or degrade lawful Internet traffic on the basis of Internet content, application, or service, or use of a non-harmful device, subject to reasonable network management.
 - **No Paid Prioritization**
 - Broadband providers cannot engage in paid prioritization, meaning management of the provider's "network to directly or indirectly favor some traffic over other traffic, including through use of techniques such as traffic shaping, prioritization, resource reservation, or other forms of preferential traffic management, either (a) in exchange for consideration (monetary or otherwise) from a third party, or (b) to benefit an affiliated entity."
 - Notably, there is no reasonable network management practice exception for paid prioritization, because paid prioritization is inherently a business, rather than network, management practice.
 - However, a waiver exists if paid prioritization would both (1) provide some **significant** public interest benefit, and (2) **would not harm the open nature of the Internet**.

US

Rules To Be Fleshed Out on a Case-by-Case Basis

- The Reasonable Network Management Qualification:
 - The FCC will consider, on a case-by-case basis, making exceptions from the No Blocking and No Throttling rules if a practice “is primarily used for and tailored to achieving a **legitimate** network management purpose” based on the ISP's underlying technology (e.g., fiber, DSL, cable)
- A Standard for Future Conduct:
 - Subject to reasonable network management, ISPs cannot **unreasonably interfere** with or **unreasonably disadvantage** consumers or edge providers as to:
 - choice;
 - access;
 - creation; and
 - availability of content.
- Evaluation will occur on a case-by-case basis, which may effectively increase the role of the FCC's Enforcement Bureau in policy making.

US

New Transparency Rules

- ISPs must disclose and regularly update information concerning:
 - Network management practices, particularly those likely to have significant effects on consumer use of services, including congestion management, application specific behavior, device attachment rules, and security;
 - Commercial terms: pricing, privacy policies, promotional rates, fees, and surcharges;
 - Performance metrics: speed, latency, and packet loss information; and
 - Existence of any data caps or allowances.
- The FCC will also require providers to introduce a mechanism to directly inform end users if their particular use will trigger a specific network practice likely to significantly impact their use of the service.
- Smaller ISPs - those fixed and mobile providers with 100,000 subscribers or less
 - are temporarily exempt from disclosure requirements.

US

Scope of the New Rules:

Broadband Internet Access Services ("BIAS")

- Coverage of Broadband Internet Access Services: The rules apply to "mass-market retail broadband service by wire or radio that provides the capability to transmit data to and receive data from substantially all Internet endpoints," and functional equivalents.
- BIAS covers broadband services that can be purchased from cable, phone, and wireless providers, and can be provided over any platform, including wire, terrestrial wireless, and satellite.
- BIAS includes the exchange of Internet traffic by end users, edge providers, or intermediaries with the broadband provider's network.
- Broad Coverage: Data services that are not transmitted over the public Internet, (e.g., VoIP provided over cable systems), are prohibited from undermining the new rules.
- Excluded from Coverage:
 - (1) dial-up Internet access service, (2) content delivery services, (3) enterprise services, (4) virtual private network services, (5) hosting services, (6) data storage services, and (7) services of premises operators to the extent that they offer BIAS.

US

New Interconnection Requirements

- The Order grants the FCC specific authority to evaluate interconnection disputes for the first time.
- The Order notes that the representation from broadband providers to consumers that consumers will be able to access all Internet endpoints necessarily means a promise that the providers will make the necessary interconnection arrangements.
- Title II Evaluation: Interconnection between edge providers or intermediaries and broadband providers will be evaluated under traditional Title II analysis, which forbids unjust or unreasonable preferences or discrimination.
- Interconnection disputes will be evaluated on a case-by-case basis.

Canada

Canada's Radio-television and Telecommunications Commission ("CRTC") 2009 Framework

- The CRTC has adopted a narrow view of what constitutes a traffic management practice:
 - “Technical Practices,” which include measures to slow a user's traffic, to prioritize traffic, or to detect heavy users in order to limit their bandwidth
 - “Economic Practices,” involves measures to charge more for users whose internet use exceeds a predefined limit
- Both technical and economic traffic management practices are permitted so long as the ISP has been transparent about their use of the practice and the CRTC has not specifically prohibited the particular practice

Canada

Largely an Ex-Post Facto Regime

- General rule: No prior regulatory approval required
- But at least 30 days prior to introducing a traffic management practice, Canadian ISPs must:
 - make a **basic disclosure** of whether technical traffic management practices are being used and, if they are, the effect they have on your Internet service
 - **Why** the Internet traffic management practice is being used
 - **Who** is affected by the practice
 - **When** it will apply the practice
 - **What** type of Internet traffic—for example, peer-to-peer file sharing—is subject to the practice
 - **How** the traffic management practice will affect the user's Internet experience, including the specific effect on the speed of subscriber's Internet connection
 - disclose relevant **Pricing information**, including information about any pricing that links Internet service rates to how much you use the Internet

Canada

Exceptions to Ex-Post Review

- ISPs are required to obtain prior Commission approval before applying traffic management practices in two instances:
 - When they are applying the practices to wholesale Internet services; and
 - When the CRTC has prohibited the traffic management practice that the ISP intends to apply.

Canada

Net Neutrality Precedents in Canada

- Ex-post complaints under the 2009 Framework
 - The CRTC continues to receive and process a fair number of consumer complaints regarding Canadian ISPs' traffic management practices under its 2009 framework.
 - In 2012, Rogers Communications voluntarily phased out its practice of slowing down online gaming traffic following a complaint by the Canadian Gamers Organization pursuant to the 2009 Framework.
 - Between October 1, 2014 to September 30 2015, the CRTC received a total of 51 complaints from consumers and customers about retail internet access services.

Canada

Net Neutrality Precedents in Canada

- Applications under the *Telecommunications Act* for breach of prohibition against unjust discrimination/undue preference include the following:
 - December 2011: Securing of exclusive programming rights to NFL and National Hockey League content by Bell for its mobile platform
 - September 2014: Bell refusal to provide programming content that it distributed on its own OTT platforms to a competitive OTT service provider
 - January 2015: Bell and Videotron's practice of exempting subscribers of their respective mobile TV services from mobile wireless data charges
 - March 2015: Rogers Media refusal to provide exclusive OTT content to Bell for distribution on Bell's OTT platforms
 - October 2015: Bell's Relevant Advertising Program

Deep-dive Europe & Turkey

EU

Key legal changes

- On October 27, 2015, the European Parliament passed a new electronic communications Regulation, with a view to "protecting net neutrality". This forms part of the EU's Digital Agenda.
- Article 1 of the new Regulation states that it aims to “*safeguard equal and non-discriminatory treatment of traffic in the provision of internet access services and related end-users’ rights.*” However, the Regulation also includes several exceptions to this general principle.
- National regulatory authorities will be tasked with monitoring and enforcing compliance with the new rules (and to set penalties for non-compliance). Guidelines will be issued by the Body of European Telecoms Regulators (BEREC) to assist in that process.

Key legal changes

- **Reasonable traffic management measures**

- ISP are permitted to implement “reasonable traffic management measures” which must not be based on commercial considerations, but can include blocking, restricting, interfering with and discriminating between content, applications or services “as necessary” to (a) comply with local laws; (b) preserve network integrity and security; or (c) prevent/mitigate network congestion.

- **Content optimized services**

- ISP can offer optimized carriage services ("aka a prioritized "fast lane") if they have sufficient network capacity. But these cannot be a replacement for internet access or cause a detriment to the general quality of Internet services. These services may include improved quality IPTV.

- **Transparency measures**

- ISP will be required to explain in their contracts with consumers how traffic management measures may impact Internet access and how any content optimized services might affect access of the end-users and their download speeds.

Europe

UK

- The UK approach to "net neutrality" is currently based on self-regulation. Open Internet Code of Practice is a voluntary scheme aimed at supporting an "open internet" in the UK and it is governed by three principles:
 - users should be able to access all legal content;
 - there should be no discrimination against content providers on the basis of commercial rivalry; and
 - traffic management policies should be clear and transparent.
- The "Open Internet Code of Practice" puts requirements in place on traffic management including banned targeting and degrading of content and requires that full internet access is offered as the norm.
- All major internet service providers (ISPs) and Mobile Network Operators (MNOs) are signatories of the Code as of January, accounting for well over 90% of fixed and mobile connections.

Europe

The Netherlands

- The Netherlands was the first European country to adopt a Net Neutrality law.
- The net neutrality rules are established by Article 7.4a of the Dutch Telecom Act.
- Under Article 7.4a, Internet services and applications must not be blocked or throttled, and Internet access charges shall not be made dependent on the services and applications used.
 - Charging extra or applying other special conditions for using specific Internet services like Skype is not permitted.
 - Charging differently for different bandwidth packages is permitted.

Europe

The Netherlands

- Exceptions:
 - **Congestion**
 - Providers may still take action to prevent or manage congestion on their networks, as long as they treat all similar “bits and bytes” equally and do not favor one service or application over another.
 - **“Proportional prioritization”**
 - Providers may, in case of congestion, generally giving priority to users with higher bandwidth packages over those with lower ones, proportionally to their respective packages.
 - **Network and Service Security and Integrity**
 - Net neutrality may be curbed for reasons of network and service security and integrity, for example to deal with botnets, DOS attacks or hackers.
 - Blocking spam will still be allowed.
 - **Court Orders**
 - ISPs must comply with applicable legal requirements and court orders. Thus, blocking access to sites for which there are specific Dutch court orders will be allowed.

Europe

The Netherlands

- The Dutch net neutrality rules do not ban traffic management services for delay-sensitive, quality-critical services like voice, online gaming and HD video. It is generally accepted that providers of these services need special arrangements with telcos to get some preferential treatment.
- It is also generally accepted that some form of dimensioning, based on assumptions about likely network use at any one time, is necessary simply to make networks run smoothly while demand for bandwidth-hungry services increases.
- The net neutrality rules are enforced by the Dutch Consumer & Market Authority (ACM).

Europe

The Netherlands

- December 2013: ACM allowed T-Mobile to block certain services that require high capacity (p2p and streaming services) and therefore cause delay file transfer services) of their free Wifi hotspot service in public trains. The ACM viewed this practice as a legitimate means for preventing congestion of their network.
- January 2015: ACM fined Dutch telco's KPN (EUR 250k) and Vodafone (EUR 200k) for violating the net neutrality rule. KPN had blocked access to certain Internet services (such as Skype) from its free WiFi hotspots that are available across the Netherlands, which is prohibited. Vodafone had allowed certain customers to watch HBO through a dedicated app without charging the customers for the data they used, which is prohibited.
- May 2015: ACM published their guidelines for upholding net neutrality. These guidelines explain that the term 'internet access service' should be broadly interpreted. Providing access to one single content service or functionality by means of an Internet connection is exempt from the rules. If (a combination of) more services are provided by means of the Internet connection, it is considered to be an 'internet access service' in-scope of the rules. As such, ISP cannot charge different rates for different services that can either be provided separately or as part of a combination of services.

Europe

The Netherlands

- In July 2015, the ACM ruled that the Dutch telco KPN's "Unlimited Spotify" services are inconsistent with the guidelines because KPN does not charge these customers for Spotify data usage.
 - As of 1 May 2015, new customers can no longer benefit from this service. Existing customers may still benefit from free Spotify data usage until their contract period of 2 years at maximum ends.
 - The last contract of these contracts will end on 30 April 2017.
- When the new EU Regulation enters into force within a few months, the Dutch rules on net neutrality will no longer apply. The new EU rules will replace the Dutch rules automatically. The ACM will then need to uphold the EU rules on net neutrality, which clearly provide less customer protection than the Dutch rules (because they provide for more exceptions).

Turkey

Generally Following the EU's Regulations

- There are no explicit rules about Net Neutrality in Turkey, but the national regulatory authority (ICTA) generally follows EU regulations.
- Nonetheless, in 2012, the ICTA fined the incumbent Internet service provider -- TTnet -- for degrading access to certain file sharing sites.
- At this time, there is no public awareness of Net Neutrality as an issue.

Deep-dive Latin America

Latin America

Brazil

- The Brazilian Civil Rights Framework for the Internet (2014) makes equal access to Internet mandatory and protects the privacy of the users.
- ISPs have to treat data packages equally regardless of the content, origin or use of the service, terminal or application.

Latin America

Chile

- First country in the world to pass Net Neutrality law (in 2010).
- According to the legislation, no ISP can block, interfere with, discriminate, hinder nor restrict the right of any Internet user of using, sending, receiving or offering any content, application, or legitimate service through Internet, as well as any activity or legitimate use conducted through Internet.
- On June 1, 2014, Chile prohibited the practice of zero-rating of applications and services.
 - This prohibition may actually prevent certain lower income users for getting access to the applications and services they seek.
- Opponents of net neutrality rules, as well as some supporters, are critical of Chile's blanket application of the principle on net neutrality.

Deep-dive

Asia and Middle East

Asia

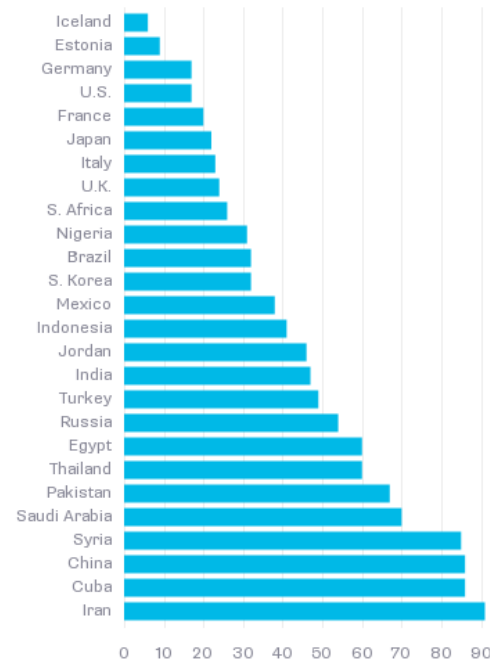
China

- No governing law on Net Neutrality.
- Strong government control over the Internet traffic.

• Source: Freedom House

Internet Freedom Scores

0=Most free. 100=Least free.



Ratings measure obstacles to access, limits on content and violations of user rights. Selected countries, 2013.

Asia

India

- No governing law on Net Neutrality.
- In 2015, Telecom Regulatory Authority of India (TRAI) released a consultation paper regarding the over-the-top services and is expected to come up with recommendations still during this year.
- Last week, the opposition Congress has said that the BJP government has failed to define and address the issue of net neutrality, and criticized the failure of the government to question private sector initiatives featuring zero-rating like such as Facebook's internet.org (now known as "free basics")

Asia

Japan

- No governing law on Net Neutrality.
- However, the Ministry of Internal Affairs and Communications ("MIC") issues net neutrality guidelines.
- The 2007 guidelines contain three guiding principles:
 - Free access to the content / application layer
 - Free connection with any terminal that meets technical standards
 - Use of networks at a reasonable price without discrimination
- The 2008 guidelines make clear that network congestion should be resolved by increasing network capacity. Traffic shaping should only be used exceptionally (e.g., when excessive use of bandwidth degrades the quality of service for general users). The quality of service must be diminished equally for all users. In addition, user privacy shall be respected.
- Users must be informed about traffic shaping policies through their contract terms and conditions, and this information should also be made available online to the public.

Asia

Russia

- General Telecommunications Regulations...
 - Federal Law of July 7, 2003 No. 126-FZ “On Telecommunications” (the “Law”)
 - Rules of Connection of Telecommunication Networks and Interaction between Them approved by Decree of the Government of March 28, 2005 No. 161
 - Rules of Telematic Telecommunications Services approved by Decree of the Government of September 10, 2007 No. 575 (the “Rules”)
- ...provide NO EXPLICIT regulation of the Net Neutrality principle, but they allow specific targeted limitations:
 - A provider may suspend telecom services if the subscriber is in breach of their Telecom Agreement and/or as required by applicable law (including by requirement of investigation or state security bodies)
 - The provider may also limit certain actions of subscriber or user if such actions pose threat to normal functioning of the network (malware, DDoS, etc.).
 - In the event of an emergency (whether caused by natural or technology sources), competent authorities have priority to use, suspend or limit telecommunications network. Operators should give absolute priority to any messages related to human safety and/or emergency.

Asia

Russia

- In February 2015, the Federal Antimonopoly Service of the Russian Federation finalized the Report on Practicability of the Net Neutrality Principles on Telecommunication Networks.
- The Key Conclusions make clear that there is Net Neutrality in Russia to a certain extent:
 - Traffic management and prioritization are required to ensure proper functioning of networks and meeting industry standards of quality / complying with contractual obligations.
 - Traffic management can be allowed to the extent it is required to ensure certain quality of service.
 - Russian users have constitutional right to receive and transmit legally compliant content.
 - While the operators must inform users on price, quality and conditions of telecom services, they do not receive information about traffic management.
- Net Neutrality can further be limited in order to prevent:
 - Unfair competition.
 - Agreements between market actors aimed to limit competition.
 - Actions by dominating market actors which can limit competition or infringe third party rights.

Asia

Russia

- The **Federal Antimonopoly Service** of the Russian Federation believes that the following measures can further support the Net Neutrality principle:
 - Public availability of information about how operators manage traffic to the extent necessary to receive telecom services and access to information, services and apps (for users) and/or to the extent necessary to build business processes (for content providers).
 - Making it more difficult to justify, on technology grounds, unreasonable discrimination among services and apps, in particular between similar services and apps. The traffic should be processed on a general grounds and the network should be consistent and safe.
 - Possibility to differentiate network tariffs in connection with traffic management, but due to quality of network services and not due to who is the over-the-top provider (e.g., in cases where over-the-top providers offer similar services).
 - Provision for telecom operators of equal possibilities to manage traffic within the interconnected network of the Russian Federation, irrespective of the technology used.

Middle East

Egypt and the Gulf Cooperation Council (GCC) States

- No Gulf State has any express rules on, or ideas of introducing, net neutrality obligations.
- However, it is possible that other rules (e.g., antitrust) might be used to prevent dominant providers from applying to other operators or apps a different class of service from that offered to the dominant entity's competing downstream business – or that specific access obligations imposed on dominant providers might be interpreted as requiring particular classes, or non discriminatory classes of internet access to be provided
- There is heavy internet filtering/censorship in many GCC countries
 - Services like Skype are blocked, or blocked for connection to the public network, in a number of GCC states.
 - In Oman for instance, any voice or voice plus video service can only be offered under a telecoms license, and Skype is blocked although the TRA has authorized certain services (e.g., Google Talk) for private use.

Conclusions

The outcomes of the Net Neutrality debates around the world will have a direct impact on Nokia's business

These debates will not always use the term "Net Neutrality"

The debate is multi-faceted, and regulators would benefit from sophisticated input by companies like Nokia

One very important message is that technology will only work if the engineers are free to optimize networks and services: optimization is just another word for discrimination

Nokia should consider embracing a sophisticated approach to Net Neutrality as a business differentiator among its competitors

Net Neutrality is also an important moral and ethical issue that Nokia should consider using to advance its values around the world

Todd Daubert Biography



Todd D. Daubert

Partner

Public Policy & Regulation; Telecommunications

D +1 202 408 6458

E todd.daubert@dentons.com

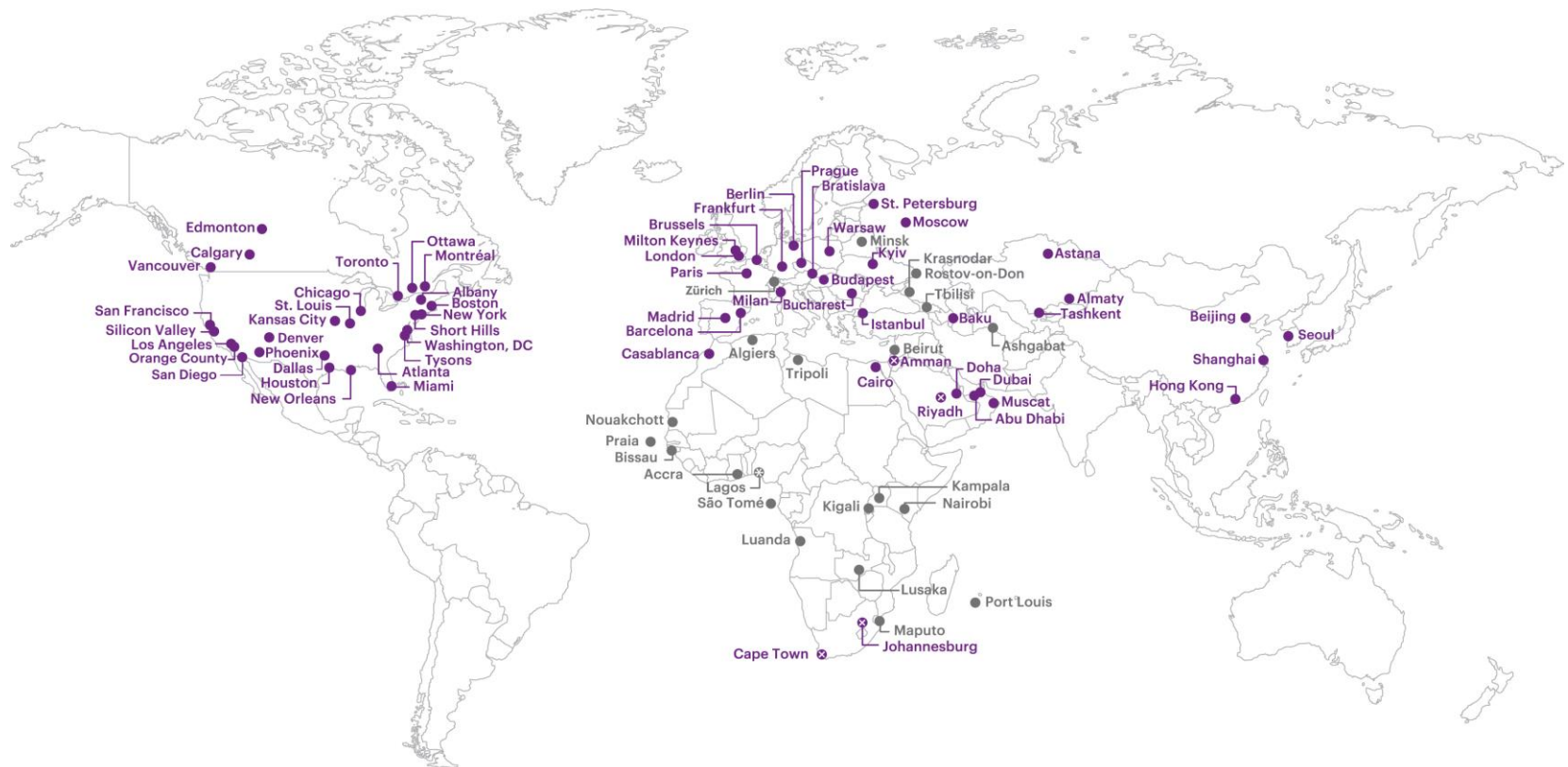
Todd Daubert is a partner in the firm's Washington, DC office, and is chair of the legacy Communications and Technology Sectors with nearly two decades of experience advising companies on a broad range of technology, communications and privacy issues. Todd has extensive experience advising companies that are developing, integrating or deploying new technologies in transactional, regulatory, litigation and appellate matters. Leveraging his dual backgrounds in engineering and the law, Todd delivers innovative solutions that help clients achieve strategic objectives, minimize risk and deliver better business results.

Ranging in size from national wireless and wireline carriers to startup technology companies, his client base includes communications providers, software and application developers, broadcasters, investors, and companies that rely on communications and technology to conduct their business. Todd assists these clients in complying with an increasingly complex framework of law and regulation, helping them respond to new, existing and anticipated regulation by developing strategies that minimize interruptions to business and enhance their ability to achieve their goals as efficiently as possible.

Select Experience

- Represented various national and regional carriers in deploying services and obtaining necessary regulatory approvals, interconnection agreements and service agreements with other carriers and vendors.
- Represented national and regional wireless carriers in the negotiation of multiple-year backhaul and service agreements, including multiple hundred-million-dollar agreements.
- Advised national wireline and wireless carriers regarding technologically complex services to ensure compliance with all applicable regulatory requirements including, for example, net-neutrality, roaming, addressability and signaling issues, building access and pole attachments, and numbering issues.
- Developed compliance strategies and manuals for various companies for all major regulatory requirements, including privacy and CPNI, 911 services, truth-in-billing, universal service, CALEA and Telecommunications Relay Services.
- Defended a global tool and equipment manufacturer during an investigation by the FCC that concluded without any formal findings of wrongdoing or further reporting requirements.

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The Dentons logo, consisting of the word "DENTONS" in white, uppercase, sans-serif font, enclosed within a purple arrow-shaped graphic pointing to the right.

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