

The EDRi papers

# NET NEUTRALITY 2.0



EUROPEAN DIGITAL RIGHTS



Net Neutrality means that every point on the network can connect to any other point on the network, without discrimination on the basis of origin, destination or type of data.

This principle is the central reason for the success of the internet. Net Neutrality is crucial for innovation, competition and for the free flow of information. Most importantly, Net Neutrality gives the internet its ability to generate new means of exercising civil rights such as the freedom of expression and the right to receive and impart information.

In this booklet, we will explain the principle of Net Neutrality, why it is important, why certain internet access providers believe that they have an interest in violating it, and we will address common misconceptions.

**“Allowing broadband carriers to control what people see and do online would fundamentally undermine the principles that have made the internet such a success.”**

**- Vint Cerf, founding father of the internet**

**With financial support from**

---

**European  
Cultural  
Foundation**

# CONTENTS

**PAGE 01**

## **WHAT IS NET NEUTRALITY?**

FREEDOM OF COMMUNICATION IN THE DIGITAL ERA

**PAGE 05**

## **WHY IS NET NEUTRALITY VIOLATED?**

THE THREE MAIN REASONS

**PAGE 07**

## **10 REASONS FOR NET NEUTRALITY**

**PAGE 10**

## **MYTHS & TRUTHS**

**PAGE 13**

## **THE SITUATION IN THE EUROPEAN UNION**

WAITING FOR NET NEUTRALITY

**PAGE 15**

## **THE NETHERLANDS**

A CASE STUDY

**PAGE 17**

## **10 WAYS TO SAFEGUARD NET NEUTRALITY**

**PAGE 19**

## **GLOSSARY**

Original booklet written by:

Kirsten Fiedler and Joe McNamee, ex-colleagues at EDRI.

With contributions by EDRI members.

Edited and updated by:

Jan Penfrat, Senior Policy Advisor

Rafael Javier Hernández, Communications Intern

Gail Rego, Senior Communications and Media

Manager

The EDRI (European Digital Rights) network is a dynamic collective of 44+ NGOs, experts, advocates and academics working to defend and advance digital rights across Europe.

European Digital Rights

12 Rue Belliard

1040 Brussels

[brussels@edri.org](mailto:brussels@edri.org)

Design by: CtrISPATIE

# WHAT NEUT

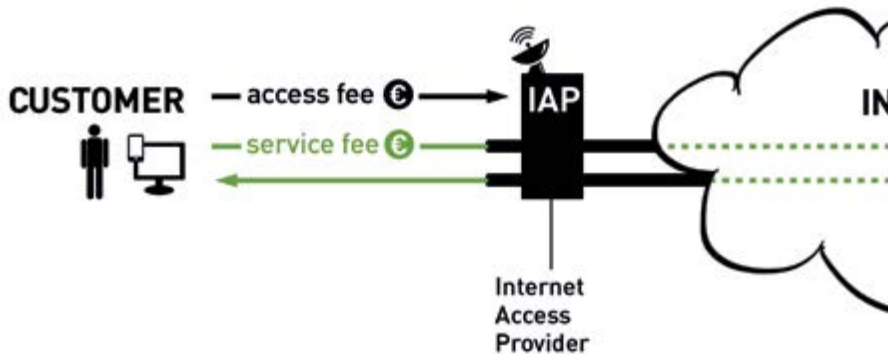


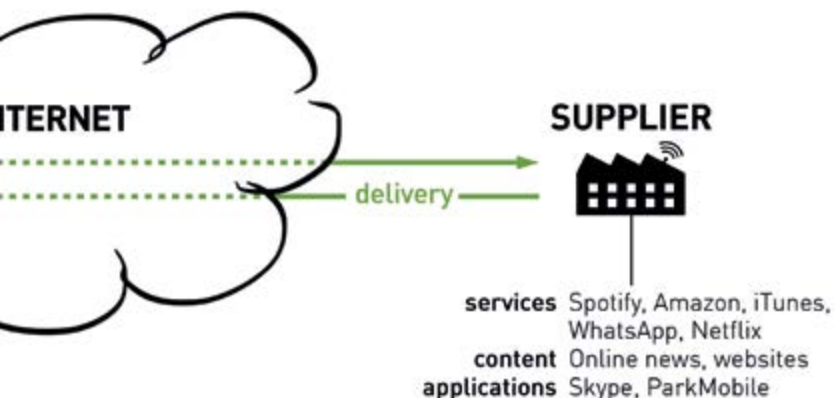
fig 1: Open neutral access model

## WHAT IS NET NEUTRALITY?

The internet is an interconnected and decentralised network that links devices around the globe. We can access the internet via connections provided by our telecom (or internet access) providers. These access providers transmit the information that we send over the internet in the form of so-called data “packets”. The way in which data is sent and received on the internet can be compared to sending the pages of a book by post in lots of

different envelopes.<sup>01</sup> The post office can send the pages by different routes and, when they are received, the envelopes can be removed and the pages put back together in the right order. When we connect to the internet, each one of us becomes an endpoint in this global network with the freedom to connect to any other endpoint, whether this is another person's computer (“peer-to-peer”), a website, an application, an email system, a video stream and so on. The

# IS NET RALITY?



success of the internet is based on two simple but crucial components of its architecture:

1. Every connected device can connect to every other connected device and
2. All services use the "internet Protocol," which is sufficiently flexible and simple to carry all types of content (video, e-mail, messaging etc).

Net Neutrality is most commonly defined as the principle that internet users can connect to any other point in the network, and that they can create, access and use any content, service and application they choose without discrimination. Everybody in whatever role, and all organisations of whatever size and style, can participate globally. Everybody can access services and to offer services. Telecom companies enable us to

01 EDRi booklet: How the internet works [http://www.edri.org/files/2012EDRiPapers/how\\_the\\_internet\\_works.pdf](http://www.edri.org/files/2012EDRiPapers/how_the_internet_works.pdf)

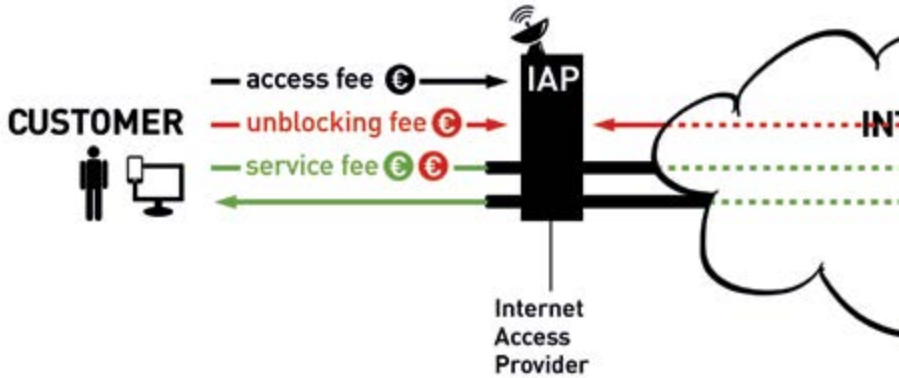


fig 2: Non-neutral access model

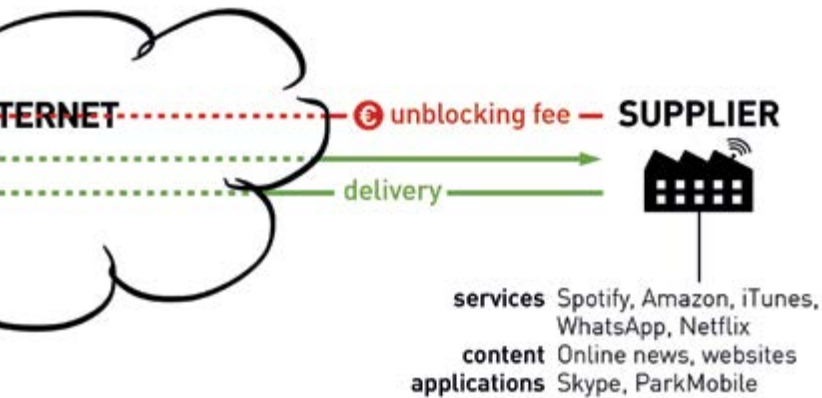
communicate, browse the web, or transfer files over the internet, or make our own websites available globally and to use services such as e-mail, social media or internet telephony. When you want to watch a video online, for instance you connect to the internet, open your browser and navigate to the video service of your choice. This is possible because your access provider does not seek to restrict your options.

Without Net Neutrality, however, you might find that your connection to Video Service A is being slowed down by your access provider in a way that makes it impossible for you to watch the video. At the same time, you would still be able to connect rapidly to competing Video Service B and maybe watch exactly the same content.

Why would your access provider do such a thing? There are many reasons: for example, your access provider might have signed an exclusive agreement with Video Service B. Or the provider might offer their own video services and therefore want to encourage you to use these instead of the service that you initially preferred.

Such discriminatory measures are often called "traffic management". These are just two of the many reasons why telecom providers might violate Net Neutrality. We will explain the most common reasons for violations of Net Neutrality in the following chapter.





“I don’t believe that restricting consumers’ choice can ever be an appealing driver of more growth. I certainly don’t believe that restricting access to the internet will attract many more innovative European internet companies. And I don’t believe that restricted access to the internet is the right answer to a faster deployment of Next Generation Access Networks.”

- Former European Commission Vice-President, Viviane Reding

“When I invented the web, I didn’t have to ask anyone for permission [...]. To reach its full potential, the internet must remain a permissionless space for creativity, innovation and free expression. Now imagine what would happen if internet service providers—usually a handful of big cable companies that control the connectivity market—were allowed to violate Net Neutrality. Their gatekeeping powers could be used to require businesses and individuals to pay a premium to ensure their content is delivered on equal terms—or even at all. This would create barriers that disadvantage small businesses and startups across all sectors that rely on the internet in any way.”

- Sir Timothy John Berners-Lee, inventor of the World Wide Web

# WHY IS NET VIOLATED?

## THE THREE MAIN REASONS

There are many reasons why internet access providers do not respect Net Neutrality. Here are the three most common reasons:

### 1. Access providers violate Net Neutrality to maximise profits

Some internet access providers demand the right to block or slow down internet traffic for their own commercial benefits. Internet access providers are not only in control of internet connections, they are also moving towards providing content, services and applications. They are increasingly looking for the power to become the "gatekeepers" of the internet. For example, the Dutch telecoms access provider KPN tried to make their customers use KPN's own text messaging service instead of web-based chat services by blocking these free services. Another notable example of discrimination is T-Mobile's blocking of internet telephony services (Voice over IP, or VoIP in short), such as those provided by Skype, in order to give priority to their own service and those of their business partners.

### 2. Access providers violate Net Neutrality to offer you "free

### services" (a.k.a. zero-rating)

Most of Europe's internet access providers now have special price plans for their customers that will not charge them for certain sites and apps. This concept is known as "zero-rating". This means that users are not charged for some data (i.e. it does not count against their data cap) when using data for a particular service. For example, the Belgian provider Proximus allows customers to surf without any charges when using a number of specific applications such as Pokémon Go, Spotify, Youtube or Deezer. Although at first sight it may look as though you get something for free, the reality is that your freedom of choice is restricted.

Zero-rating actually allows internet access providers to influence the choice of their customers regarding what applications and services they can and cannot use. Instead of simply selling internet access, providers increasingly want to sell customers selected online content, applications and services provided either by them or their partners. Every competitor to a zero-rated service has a disadvantage, because users have to pay extra to be able to use their service. Zero-rating only helps big companies to

# NEUTRALITY

cement their market power and kill off their competition. Without zero-rating, your internet access provider could be offering you more data volume that you could freely decide how to use.

### 3. Access providers violate Net Neutrality to comply with the law

Governments are increasingly asking access providers to restrict certain types of traffic, to filter and to monitor the internet in order to enforce the law. A decade ago, there were only four countries filtering and censoring the internet worldwide – today, there are over forty. In Europe, website blocking has been introduced for instance in Belgium, France, Italy, the UK and Ireland. This is done for reasons as varied as protecting national gambling monopolies and implementing demonstrably ineffective efforts to protect copyright holders.

Some politicians call for Net Neutrality and demand filtering or blocking for law enforcement purposes at the same time. However, it is a paradox to create legal incentives for operators to invest in monitoring, filtering and blocking technology, while at the same time demanding that they do not use this technology for their own business purposes.

### Deep Packet Inspection (DPI)

Information that we send and receive through the internet travels in so-called “packets”, with “envelopes” indicating sender and receiver. Unlike normal network equipment, DPI looks not just at the envelopes but verifies the packet contents. DPI can be used to disrupt or block certain packets based on what they contain. Sometimes this is done for innocuous reasons such as fighting spam or computer viruses, but it is also used for surveillance and censorship. DPI makes it possible to capture information from network traffic and analyse it in real time.

In Russia, for example, DPI solutions from hardware manufacturer Cisco are allegedly being used by the government to block access to certain websites. Cisco's DPI tools are also being used by T-Mobile in Germany to analyse the data flowing through its mobile networks.

# 10 reasons

for

## NET NEUTRALITY

reason  
**01**

### No discrimination

– Net Neutrality is the principle that all types of content and all senders and recipients of information are treated equally. This principle upholds the right to freedom of expression which includes the freedom to seek, receive and impart information and ideas of all kinds. Without Net Neutrality, internet access providers would become gatekeepers for the access to content on the internet, with the power to decide what we can and cannot read and write and with whom we are allowed to communicate.

reason  
**02**

### Free Expression

– The history of the internet clearly shows that Net Neutrality encourages creative expression. The ability to publish content and to express opinions online does not depend on financial or social status and is not restricted to an elite. There is a huge trend towards people sharing information and experiences online, sometimes referred to as Web 2.0. This means that individuals, traditional news sources and small and large businesses can all create content that is available to everybody. Net Neutrality enables information

to travel through the network without being restricted or blocked, thereby enabling a vibrant digital environment full of ideas and innovation.

reason  
**03**

**Privacy** – Measures to undermine Net Neutrality can have a direct impact on our privacy. In a non-neutral internet, providers would be able to monitor our communications in order to differentiate between messaging, streaming, peer-to-peer (P2P), e-mails and so on. According to a recent study, some European access providers are already doing this through the use of Deep Packet Inspection (DPI) for their commercial benefits (see info box on Deep Packet Inspection). Once put in place, it is likely that government and intelligence agencies will want to use (and potentially abuse) this technology as well.

reason  
**04**

**Access to Information** – Net Neutrality is also the catalyst for the creation of diverse and abundant online content. Non-profit projects such as Wikipedia, and blogs and user-generated content in

general have the same conditions to access and publish information as large, commercial internet players. Without Net Neutrality, we would have a two-tier internet where only those who can afford it would be able to access information at high speeds and without restrictions.

reason  
**05**

**Democratic Process** – Net Neutrality improves the quality of democracy by ensuring that the internet remains an open forum in which all voices are treated equally. It ensures that the ability to voice opinions and place content online does not depend on one's financial capacity or social status. It is therefore a powerful tool in facilitating democracy, enabling diverse ideas to be expressed and heard.

reason  
**06**

**Tool against censorship** – Without Net Neutrality, network operators can block or throttle not only services, but also content. Such powers would make political movements such as the Arab Spring or the demonstrations for the freedom of Hong Kong

“The concept of Net Neutrality builds on the view that information on the internet should be transmitted impartially, without regard to content, destination or source. By looking into users’ internet communications, ISPs may breach the existing rules on the confidentiality of communications, which is a fundamental right that must be carefully preserved. A serious policy debate on Net Neutrality must make sure that users’ confidentiality of communications is effectively protected.”

- European Data Protection Supervisor (EDPS) on Net Neutrality

much harder, if not impossible. The freedom and openness of the internet is crucial to greater social change, more transparency and the free flow of critical information.

reason  
**07**

**Consumer choice**

– Net Neutrality ensures access to content and offers greater consumer choice by allowing more players to enter the marketplace. This means that the amount of online information is vast and continuously growing, leading to intellectual and cultural interaction that was scarcely imaginable twenty years ago. Without a neutral net, access providers can prioritise applications or services and create “walled gardens” in which consumer choice is limited.

reason  
**08**

**Innovation and competition**

– Net Neutrality continues to foster innovation, as individuals and companies alike create content and provide new services with the whole online world as their audience. Any individual can upload content at a relatively low cost. An unrestricted internet gives market access to small and medium enterprises or start-ups that might not otherwise have a competitive edge against larger corporations. Without Net Neutrality, however, access providers are allowed to restrict access needed by innovators that seek to develop online services. Innovators would have a smaller and less predictable marketplace for their services and start-ups

might not be able to reach all of their potential customers without paying their internet provider for it.

reason  
**09**

**Digital Market – Single Market**

– Net Neutrality is a cornerstone for the completion of the Digital Single Market. It removes barriers and allows users to freely communicate, fully express themselves, access information and participate in public debate – without unnecessary interference by gatekeepers or middlemen. By contrast, a non-neutral internet contributes to the fragmentation of the Digital Single Market.

reason  
**10**

**Protecting a global internet**

– As soon as internet access providers start making use of traffic discrimination tools to interfere in global communications for their own commercial benefit, many governments will be tempted to use the same technology for public policy goals as well. In fact, Western governments are increasingly asking providers to restrict certain types of traffic and to filter and monitor the internet to enforce the law. In other parts of the world this has led to “national internets”, such as the “Chinternet” in China and the “halal” internet in Iran. The principle of Net Neutrality will help protect the global internet.

# MYTHS

&

# TRUTHS

## Myth 1

Net Neutrality legislation isn't necessary, since internet users can "vote with their feet"

From lawmakers to industry representatives, many say that if a company restricts access to the internet, blocks websites or services, or suggests which apps to use or not use, users can simply switch providers to those who offer access to the "full" internet. For years, however, European telecoms operators have demonstrated that without proper legislation to guide them, they will always engage in a race to the bottom to protect their short term financial interests. The open, unrestricted internet cannot be left to the arbitrary dynamics of market forces that are not concerned with the general interest of users. For users, switching provider sounds great but is often difficult as they are typically tied into lengthy contracts. Their ability to switch providers may also not be practically feasible. In addition, across Europe, and in rural areas in particular, users don't always have options to choose from as access to the internet is only offered by one provider.

Without Net Neutrality, end users could be left in a restricted, low quality slow internet, without even knowing about it or having remedy mechanisms to address this issue.

## Myth 2

Net Neutrality legislation would mean no network management, causing problems for the quality of the internet

Telecoms operators have long argued that legislation protecting Net Neutrality would prevent access providers from managing their networks. However, the Transmission Control Protocol (TCP) that is at the core of internet engineering has been one of the greatest congestion management tools that has helped make the internet such a success. What Net Neutrality would prevent is not traffic management but arbitrary restrictions by access providers designed to undermine the openness of the internet as a short-term measure to make extra profits. The first years of implementation of the EU Net Neutrality rules further confirm that internet access providers have been able to manage traffic

and congestion in their network in line with the rules without facing any major issues.

to invest in infrastructure and improve high speed broadband penetration.

### Myth 3

**Net Neutrality is bad for the development of infrastructure – who is going to pay?**

The availability of content is a factor that stimulates broadband investment. Revenues from broadband and mobile access are dependent on demand for web-based content and applications. This has been empirically proven through studies which found that “the ability of consumers to access internet content, applications and services is the reason consumers are willing to pay internet access providers. Access providers are dependent on this demand to monetise their substantial investments.

Yet some internet access providers argue that application and content providers “free ride” on network investments made by others. This argument does not take into account that users already pay for content and applications, which allows access providers to profit from their investment in networks. In addition, as new innovative services will develop in an environment where Net Neutrality and the “innovation without permission” principles are guaranteed, the demand for faster and better access to the internet will grow, generating more value for internet access providers and a stronger incentive to invest in enhanced network capacity, including 5G. This so-called “virtuous circle” illustrates the long-term economic benefit for telecommunications companies

### Myth 4

**The development of 5G will be impossible if the EU keeps its Net Neutrality rules**

In several statements and manifestos, telecoms operators are threatening to withhold investing in next-generation mobile networks such as 5G unless regulators withdraw or water down rules for Net Neutrality, claiming technical incompatibility between the two. These statements are largely unsubstantiated as mechanisms exist to deal with the objectives and opportunities brought by 5G such as low latency functionality and response to high connectivity demand through standards that respect Net Neutrality. Furthermore, the European guidelines provided by the regulator BEREC (Body of European Regulators for Electronic Communications) outline how to operationalise some of the techniques that may be used to develop 5G in line with EU Net Neutrality rules.

### Myth 5

**Allowing zero-rating will help promote broadband investment**

Time and again, some access providers have publicly expressed their will to charge content and application providers, through so-called zero-rating agreements – in addition to access charges already paid by end-users. They argue that this will help their investment in next generation networks and their response



to increasing demand for high volume services. This is both a dangerous and counter-intuitive approach. First, zero-rating is the opposite of Net Neutrality as it negates the principles that all data on the internet should be treated equally. This creates risks for people's right to receive and impart information and will deter competition in the online environment. Telecom operators thereby become gatekeepers for other markets by entering into agreements with specific content providers, giving them preferential access conditions to their user base. Also, zero-rating offers can only exist as long as mobile data caps are in place because it relies on scarcity. This creates an incentive for access providers to maintain data caps and may limit investment in next generation networks.

## Myth 6

### The EU Net Neutrality law prevents innovation

Some have argued that Net Neutrality stifles innovation. But the reality shows quite the opposite in fact: a failure to enact Net Neutrality protections will undermine the freedom of content and application providers to do business. A non-neutral framework for the internet would hinder innovation in content, as start-ups and smaller companies could suddenly be faced with barriers to enter the market – and uncertainty about what kind of new barriers may be created. Net Neutrality protects everyone's freedom to impart information, including the innovators and their freedom to do business which is protected under the charter of Fundamental Rights of the EU. The EU Net Neutrality rules

have established norms for the protection of the open internet and, at the same time, technical criteria to respond to the need for so-called specialised services. These are services that require dedicated bandwidth to function such as certain connected vehicles or e-health services. With such rules, the EU shows that Net Neutrality and innovation go hand in hand.

## Myth 7

### Net Neutrality is not a problem in Europe, the law is not really needed

Prior the adoption of the EU Net Neutrality rules, there was overwhelming evidence that European access providers, particularly in the mobile sector, were serving their own commercial interests by using technical measures to tamper with end-users' ability to access the internet. Findings from BEREC show that operators in Europe were restricting access to content and services (such as P2P websites or VoIP) and degrading the quality of internet connections before the existence of the Net Neutrality rules. While the situation has largely improved since the adoption of the law, European users still experience network discrimination practices such as port blocking. In addition, the public is faced with a growing number of zero-rating offers trying to nudge them into a less free internet of "Walled Garden" services. This demonstrates the need to preserve Net Neutrality rules to avoid the spark of discriminatory practices in the EU and highlights the importance of better and stronger enforcement of the rules.



# THE SITUATION EUROPEAN

IF NET NEUTRALITY IS SO BENEFICIAL, HOW IS IT CURRENTLY BEING PROTECTED IN EUROPE?

The story of the fight for Net Neutrality in Europe is a long one... let's start in 2010. When Vice-President Neelie Kroes took over as European Commissioner for the Digital Agenda in 2010, she stated that Net Neutrality would be a central issue on her agenda and launched the first public consultation. However, she moved away from this initial commitment, with one consultation after the other and did not undertake much action to ensure Net Neutrality in Europe.

In 2011, the European Data Protection Supervisor (EDPS), warned that violations of Net Neutrality could have "serious implications" for end-users' fundamental rights to privacy and data protection. The EDPS stated that "certain inspection techniques used by ISPs may indeed be highly privacy-intrusive, especially when they reveal the content of individuals' internet communications, including e-mails sent or

received, websites visited and files downloaded."

In May 2012, after a series of consultations, the Body of European Regulators for Electronic Communications (BEREC) published findings regarding traffic management and other practices that led to restrictions on the open internet in Europe. The data from the investigation revealed the mounting trend of providers restricting access to services and applications. In 2012, the European Parliament therefore demanded the end of the "wait and see" approach and called "on the Commission to propose legislation."

However, the EU Commission did not act until September 2013, just eight months before the European elections, when it decided to propose quite the opposite of what BEREC and the EDPS had recommended: the abolition of Net Neutrality.

During the first stage of the legislative process, EDRi ran a successful campaign to convince the European Parliament to



# ON IN THE UNION

support Net Neutrality. EDRI's member organisations launched the "Save The Internet" campaign portal which led to more than 40,000 faxes sent by citizens to their elected representatives in the EU Parliament. In April 2014, the Parliament adopted the package but, contrary to the expectations of the EU Commission, decided in a landmark vote to protect Net Neutrality. Unfortunately, the process did not end there.

The Member States (the Council of the EU) also have a say in the legislative process. The text that was subsequently negotiated and adopted in 2015 by the Parliament, the Council and the EU Commission was dangerously vague and ambiguous. EDRI campaigned vigorously to defend Net Neutrality in the European Union during the whole procedure, including during the trilogue process (negotiations between the three institutions). While the final outcome was far from ideal, the result is still vastly better than all the destructive, anti-competitive, anti-citizen, anti-innovation proposals that had been put forward by the Council and Commission.

While civil society achieved a fairly good result, the Net Neutrality Regulation is somewhat vague on four key points: specialised services, zero rating, traffic management and congestion. These points are the missing pieces that need to be clarified to fully achieve Net Neutrality protections. That's why EDRI and its members continue to advocate for improvements.

After a public consultation in 2016, to which almost half a million citizens responded and demanded strong Net Neutrality, BEREC adopted European guidelines that clarify what the EU Net neutrality law actually means. The outcome of this process is a legal framework with robust and clear protections for Net Neutrality which was applauded across the world. Since then, civil society has been fighting to ensure that the National Regulatory Authorities in the Member States adequately enforce this Regulation. Everyone should be able to enjoy the benefits of a neutral net.



# THE NETHER A CASE STUDY

Contribution by Bits of Freedom

## A CASE STUDY

On 8 May 2012, the Netherlands adopted legislation to safeguard Net Neutrality. Long before there was similar EU legislation, the Netherlands was the first country in Europe and the second country in the world to enshrine the principle of Net Neutrality in law, including a categorical ban on zero-rating. The Dutch rules were repealed after the EU Net Neutrality Regulation entered into force but the Dutch legislator maintained the provision prohibiting zero-rating. It argued that although the new EU Regulation banned zero-rating in effect, it was ultimately unsatisfactory because it did not contain any explicit ban. This move clearly showed the legislature's commitment to defend a strong protection of Net Neutrality.

However, the Dutch position was immediately challenged by T-Mobile after the Dutch regulator (the Authority for

Consumers & Markets) initiated an enforcement action against its zero-rating service 'Datavrije Muziek' in 2016. This service provides selected music streaming with preferential treatment by not counting its data usage towards a user's data plan. Unfortunately, the Court of First Instance ruled in favour of T-Mobile's challenge and struck down the national provision banning zero-rating. In short, the Court held that the EU Regulation did not contain a categorical ban on zero-rating and that it supersedes any national legislation that covers the same subject matter. According to the Court, the EU Regulation's prohibition of unequal treatment of traffic is limited to the technical treatment of traffic. Commercial discrimination of traffic based on prices is, according to the Court, not covered by this norm. Zero-rating was considered a commercial practice which has to be assessed on a case-by-case

# LANDS: Y

basis. The Court did not assess whether T-Mobile's zero-rating service limited the rights of end users.

EDRI's Dutch member Bits of Freedom disagreed with this judgment and submitted an enforcement request to the Dutch regulator to act against T-Mobile's service. Based on the Court ruling, the regulator changed its previous position and decided not to take any enforcement action. In March 2018, Bits of

Freedom appealed this decision but unfortunately the Court partly deferred to its previous judgment and also held that the rights of end users were not limited.

Both judgments demonstrate that the current interpretation of the European Net Neutrality rules by the Dutch Court and regulator is a blow for strong Net Neutrality rules and falls short of the protections that existed in the Netherlands before 2016.

**“As much as anything else, the economic success of the internet comes from its architecture.”**

**- Lawrence Lessig, Harvard Law School Professor**



# 10 WAYS TO NET NEUTRALITY

- 1** The internet must be kept neutral and open.
- 2** Accessibility between all endpoints connected to the global internet must be upheld. No sub-internet offers should be allowed.
- 3** Traffic management should only be allowed as a narrowly targeted deviation from the rule. It must be necessary, proportionate and legally required.
- 4** All data packages should have the same price, every type of zero-rating, application-specific pricing or sponsored data should be prohibited.
- 5** Specialised Services are the exception to Net Neutrality. They should be narrowly defined, not take capacity from the open internet, and only be allowed for applications or services that technically and objectively cannot function over the open internet.
- 6** In their contracts and advertisements, access providers must indicate a guaranteed minimum, average and maximum speed and other quality characteristics.



# SAFEGUARD ALITY

- 7** Users need to be provided with network measurement tools to determine the real speed and quality of their connection. Consumer law should provide them with remedies against contracts that do not deliver what they pay for.
- 8** The use of Deep Packet Inspection (DPI) should remain prohibited. Access providers are not allowed to treat traffic differently based on the content of our communications or obtain knowledge about user behaviour.
- 9** End-users should be offered easy tools to report violations of the points above to an independent regulator. This regulator should have the necessary resources and competencies to enforce the above conditions. New products should always prompt regulatory assessments. Procedures should be swift and once violations are identified they must be stopped immediately. Regulators need to be transparent in their work, report regularly on their work and allow stakeholder participation.
- 10** Penalties for violations of Net Neutrality have to be harmonised in the EU. The only financial sanctions that have a sufficiently dissuasive and proportionate effect on both small and big access providers are based on a percentage of the global revenue of a company.

# GLOSSARY

**Best effort** The internet operates on a “best effort” basis in contrast to the telecom world’s end-to-end voice circuit with a guaranteed Quality of Service (QoS). This is because data traffic is often short and bursty and the overhead involved in trying to reserve resources in advance for such traffic would often be wildly excessive. In addition, there are simply too many networks involved in the internet to allow all the direct contractual relationships that would be needed for generalised QoS. See also “Peering”.

**5G** The 5G technology is the fifth generation cellular network technology that provides mobile broadband access. It is built to provide faster mobile internet connections and offers advanced traffic management called “slicing”. 5G is planned to complement the currently fastest mobile network standard LTE/4G.

**DOCSIS** DOCSIS is an international telecommunications standard that permits the addition of high-speed data transfer to an existing cable TV system.

**End-to-end principle** The end-to-end principle is part of the internet’s core architecture and asserts that internet communications should be controlled at its endpoints rather than by intermediaries. The “transmission pipe” does not discriminate against the sender, recipient or content of the data transmitted over the network.

**Filtering** The act of blocking specific packets of data when they travel through networks based on pre-defined criteria. Filtering can be used as a technique to implement security firewalls but also to censor communications.

**IP (Internet Protocol)** IP is a communications standard that allows computers to send data packets to one another. IP is the basic communication technology of the internet.

**IP address** An IP address is a numerical address that is assigned to every device connected to the internet (check our booklet “How the internet Works”). As household or business routers will often display just one public IP address for all of the people connected to it, the public IP address often only identifies a group of people rather than one specific individual.

**Internet access provider (IAP)** Usually a company (rarely a non-profit organisation) that offers access to the internet, operates fixed or mobile infrastructure, or provides access to such infrastructure.

**Peering** Many networks on the internet swap traffic with their



peers without payment. This is a sophisticated response to a complex environment. Accounting and billing and even negotiating the contracts in the first place involves costs for any organisation. At its simplest, your access provider's network is paid for by its subscribers. It may then buy bulk transit to access the rest of the internet. But if it can then simply swap traffic with its peers then this can be a win-win situation for all concerned. It would be illogical to pay your peer when they will just have to pay you back - and in addition you would both need to assume the costs of all the overheads of such an arrangement.

**Peer to peer (P2P)** A decentralised system where the end-users ("peers") are connected directly with each other via the internet. In P2P networks, no centralised servers are needed to exchange data between peers.

**Slicing** 5G network slicing allows IAPs to provide portions of their networks for specific customers or uses cases. For example, an IAP could decide to allocate a given part of its network's bandwidth to "smart home" appliances, connected cars, or data transfers of smart energy grids.

**Transmission Control Protocol (TCP)** TCP is the protocol responsible for verifying the correct delivery of data and keeping track of data packets. TCP helps to detect transmission errors and to trigger re-transmission until the packets are correctly and completely received.

**TCP/IP architecture** TCP and IP are the most common, as well as the oldest, standards for internet communication. As most transmissions of data across the internet take place using TCP on top of IP, the name TCP/IP has come to represent the complete collection of protocols used on the internet. These protocols define the rules that computers must follow in order to communicate with each other and send data to the intended destination.

**Traffic management** IAPs have always applied mechanisms to control internet traffic flows to preserve the security of the network or to avoid congestion. If IAPs engage in supplementary practices (in addition to the existing congestion control by TCP/IP) to inspect and to differentiate traffic, this is often referred to as "traffic management".

**VoIP (Voice over IP)** VoIP is a set of data communications protocols and technologies to enable voice data to be sent over the internet or over separate IP-based networks. VoIP can be used to replace traditional non-digital telephone networks.

**Zero-rating** The commercial practice of price discrimination by IAPs when providing access to specific application providers. For example, an IAP may offer access to individual applications or classes of applications without counting that access towards the user's general data volume. Zero-rating creates incentives for users to favour zero-rated services over other services and thereby reinforces existing market power and monopolisation. Zero-rating is currently the most common Net Neutrality violation in Europe.

**DON'T WANT YOUR INTERNET  
SERVICE PROVIDER TO SLOW  
DOWN YOUR FAVOURITE  
SERIES?**

**DONATE NOW**  
**[edri.org/take-action/donate](https://edri.org/take-action/donate)**

**EDRi FIGHTS FOR STRONG  
NET NEUTRALITY RULES  
TO ENSURE THAT YOUR  
INTERNET TRAFFIC IS  
TREATED EQUALLY!**





EUROPEAN DIGITAL RIGHTS

**EDRI.org**

This document is distributed under a Creative Commons 3.0 Licence <http://creativecommons.org/licenses/by-nc-sa/3.0/>