



Bundesnetzagentur

# Net Neutrality in Germany Annual Report 2018/2019





# **Net Neutrality in Germany**

## **Annual Report 2018/2019**

Report of the Bundesnetzagentur to the European Commission and BEREC  
pursuant to Article 5(1) Regulation (EU) 2015/2120  
Reporting period: May 2018 to April 2019

Courtesy translation

**Bundesnetzagentur für Elektrizität, Gas,  
Telekommunikation, Post und Eisenbahnen**

Section Internet economics

Tulpenfeld 4

53113 Bonn

Tel.: +49 228 14-0

Fax: +49 228 14-8872

E-mail: [info@bnetza.de](mailto:info@bnetza.de)

# Contents

- I. Introduction .....6
- II. Supervision and enforcement of Regulation (EU) 2015/2120 on open internet access ..... 7
- III. Enforcement activities regarding Regulation (EU) 2015/2120 and the findings of monitoring work .....8
  - 1. The safeguarding of the open internet – Article 3 ..... 8
    - 1.1. Agreements and commercial practices – Article 3(1) and (2).....8
    - 1.2. Traffic management - Article 3(3) .....13
    - 1.3. Data protection and obligations for the protection of privacy - Article 3(4).....16
    - 1.4. Services other than internet access services (specialised services) - Article 3(5).....17
  - 2. Transparency measures – Article 4 ..... 18
    - 2.1 Contractual arrangements – Article 4(1) .....18
    - 2.2 Complaints procedure – Article 4(2) .....21
    - 2.3 Monitoring mechanism – Article 4(4) .....22
    - 2.4 Additional legislative measures – Article 4(3).....24
  - 3. Supervision and enforcement – Article 5..... 25
  - 4. Penalties – Article 6..... 30



## I. Introduction

1. Regulation (EU) 2015/2120 laying down measures concerning open internet access<sup>1</sup> aims to establish common rules to safeguard equal and non-discriminatory treatment of data traffic in the provision of internet access services and related end-users' rights. It aims to protect end-users and simultaneously to guarantee the continued functioning of the internet ecosystem as an engine of innovation.<sup>2</sup>
2. In accordance with Article 5(1), national regulatory authorities (NRAs) must publish reports on an annual basis on their monitoring and findings, and provide these reports to the Commission and BEREC.
3. BEREC published "Guidelines on the Implementation by National Regulators of European Net Neutrality Rules" on 30 August 2016 in accordance with Article 5(3).<sup>3</sup> These Guidelines are designed to provide guidance on implementing the obligations of national regulatory authorities and contribute to the consistent application of this Regulation. The Bundesnetzagentur is actively involved in the ongoing process of revising the Guidelines being undertaken by BEREC. BEREC will provide a draft of the revised Guidelines for public consultation in late autumn 2019.
4. In accordance with the BEREC Guidelines (paragraph 182), NRAs should publish their reports on an annual basis by 30 June for the period 1 May to 30 April. The present report, which covers the period from 1 May 2018 to 30 April 2019, is to be submitted by 30 June 2019.
5. By publishing this report, the Bundesnetzagentur fulfils its reporting duty on its monitoring and findings for the third year of application of Regulation (EU) 2015/2120. Also by the publication of this report the Bundesnetzagentur simultaneously fulfils its reporting duty under section 43a(3) third sentence of the German Telecommunications Act (TKG).
6. The report focuses on the following issues: the safeguarding of open internet access (Article 3), transparency measures (Article 4), supervision and enforcement (Article 5), and penalties (Article 6).
7. The report covers significant activities of the Bundesnetzagentur with respect to the following:

---

<sup>1</sup> Regulation (EU) 2015/2120 of the European Parliament and of the Council of 25 November 2015 laying down measures concerning open internet access and amending Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks and services and Regulation (EU) No 531/2012 on roaming on public mobile communications networks within the Union, Official Journal 2015, L310/1. Any Article without reference to an Act or to a Regulation shall be understood to refer to Regulation (EU) 2015/2120.

<sup>2</sup> See recital 1 of the Regulation.

<sup>3</sup> Non-authorised translation of the Guidelines:

[https://www.bundesnetzagentur.de/SharedDocs/Downloads/DE/Sachgebiete/Telekommunikation/Unternehmen\\_Institutionen/Breitband/Netzneutralitaet/LeitlinienDeu.pdf?\\_\\_blob=publicationFile&v=3](https://www.bundesnetzagentur.de/SharedDocs/Downloads/DE/Sachgebiete/Telekommunikation/Unternehmen_Institutionen/Breitband/Netzneutralitaet/LeitlinienDeu.pdf?__blob=publicationFile&v=3).

- the investigation of business models and commercial practices (Article 3(2) in conjunction with Article 3(1)), including zero-rating offers (see paragraphs 16-17; 35-38) and handling of consumer complaints relating to connectivity problems due to a lack of provision of publicly available IPv4 addresses (see paragraphs 19-22) and to problems with the use of services (see paragraphs 23-27);
- investigation of traffic management measures by internet access service providers (Article 3(3); see paragraphs 34-46);
- investigation of transparency measures (Article 4(1); see paragraphs 54-64), including handling of consumer complaints relating to low data transmission rates (Article 4(1) first sentence point (d) in conjunction with Article 4(4); see paragraphs 65-78);
- operation of a quality monitoring mechanism (section 43a(3) TKG, Article 4(4) and Article 5(1); see paragraphs 85-98).

## II. Supervision and enforcement of Regulation (EU) 2015/2120 on open internet access

### *Competence*

8. In Germany, the Bundesnetzagentur is responsible for enforcing the rules on net neutrality under Regulation (EU) 2015/2120.
9. Depending on the matter at issue, the Bundesnetzagentur may consult with other authorities, for example the Bundeskartellamt, the state media authorities and the Federal Commissioner for Data Protection and Freedom of Information (BfDI). Data protection falls under the joint responsibility of the Bundesnetzagentur and the BfDI (see paragraphs 47-50).

### *Methods of supervision and enforcement*

10. Under Article 5(1), the Bundesnetzagentur must closely monitor and ensure compliance with Articles 3 and 4. The Bundesnetzagentur is responsible *ex officio* for enforcing Regulation (EU) 2015/2120 on open internet access. Its main information sources are complaints, the public media and other sources (eg information from other authorities or from internet access providers who inform the Bundesnetzagentur of a new business model).
11. In many cases the Bundesnetzagentur will take action following a complaint (complaint-based approach). The Bundesnetzagentur will support the complainant if the complainant's concerns are justified. By taking this approach, the Bundesnetzagentur is able to identify the main issues from the end-user's perspective and take appropriate measures vis-à-vis the provider concerned if necessary.
12. In addition, the Bundesnetzagentur takes into account other information about any infringement of Regulation (EU) 2015/2120 (eg information from public media or from the internet).



13. Providers of internet access services are required to carry out a self-assessment of the compatibility of their contracts with the net neutrality rules set out in Regulation (EU) 2015/2120 and, if necessary, must amend their contracts accordingly. There is no obligation to notify the Bundesnetzagentur, but the authority is willing to discuss or answer questions regarding the design of new business models. Notwithstanding the above, it may intervene if it finds any contracts for internet access services are defective.

### **III. Enforcement activities regarding Regulation (EU) 2015/2120 and the findings of monitoring work**

14. The Bundesnetzagentur's activities related to various provisions of the Regulation.

#### **1. The safeguarding of the open internet – Article 3**

##### **1.1. Agreements and commercial practices – Article 3(1) and (2)**

*Article 3(1) and (2) Regulation (EU) 2015/2120*

*(1) End-users shall have the right to access and distribute information and content, use and provide applications and services, and use terminal equipment of their choice, irrespective of the end-user's or provider's location or the location, origin or destination of the information, content, application or service, via their internet access service.*

*This paragraph is without prejudice to Union law, or national law that complies with Union law, related to the lawfulness of the content, applications or services.*

*(2) Agreements between providers of internet access services and end-users on commercial and technical conditions and the characteristics of internet access services such as price, data volumes or speed, and any commercial practices conducted by providers of internet access services, shall not limit the exercise of the rights of end-users laid down in paragraph 1.*

15. During the reporting period, several of the Bundesnetzagentur's investigations or complaints received related to Article 3(1) and (2). Of particular interest were zero-rating offers and connectivity problems due to a lack of provision of publicly available IPv4 addresses.

#### *Zero-rating gaming*

16. Both Telekom Deutschland GmbH and Vodafone GmbH added gaming applications to their zero-rating products during the reporting period. Since August 2018, Telekom Deutschland GmbH customers have been able to book "StreamOn Gaming" onto their existing "Magenta Mobil" mobile tariffs without the resulting data traffic counting towards their contractually agreed data volume. However, the loading of advertisements and other content that is not strictly related to gaming does count towards the data volume. In its investigation of this matter, the Bundesnetzagentur made enquiries of Telekom, various market players and the

Bundeskartellamt. Having evaluated their responses, the Bundesnetzagentur came to the conclusion that the terms and conditions for the participation of providers of gaming applications were designed in a clear, transparent and non-discriminatory manner. Content providers are not charged for acting as partners. Moreover, Telekom Deutschland GmbH expressed its willingness to allow providers of browser-based gaming services to participate in "StreamOn Gaming" too and said that this was already the case. The principle of treating all traffic equally in accordance with Article 3(3) is upheld. "StreamOn Gaming" does not contain any traffic management measures in the way that the "StreamOn" add-on option does for video traffic. In particular, it does not throttle the zero-rated gaming traffic. In the reporting period, the general terms and conditions for content partners had not yet been amended to clarify that browser-based providers could also participate, so the proceedings have not yet been formally closed. The Bundesnetzagentur reserves the right to reopen proceedings, in particular if partner companies are charged to participate in "StreamOn Gaming" and/or there are increased complaints relating to the "StreamOn Gaming" option.

17. Vodafone has been offering a gaming "pass" in its "Vodafone Pass" add-on option since February 2019, as part of which the relevant applications do not count towards the data volume. The Bundesnetzagentur is looking into this zero-rating offer in the same way as it has investigated the "StreamOn Gaming" offer. It had not yet concluded its investigations in the reporting period.

#### *Mobile flat rates*

18. The Bundesnetzagentur took an enquiry relating to the design of a mobile flat rate from an internet access provider as an opportunity to look at similar mobile flat rates from other providers. This investigation is ongoing.

#### *Connectivity problems caused by a lack of publicly available IPv4 addresses*

19. During this reporting period, as in the previous one (see Net Neutrality Annual Report 2017/2018, paragraph 28), the Bundesnetzagentur focused on the provision of privately and publicly available IPv4 addresses and the use of Network Address Translation (NAT) by internet access providers. End-users had complained about connectivity problems and had been unable to use certain services and applications. There had been problems with smart home and some gaming applications, and in the operation of end-users' own servers. The reason for this was that owing to the scarcity of public IPv4 addresses, private IPv4 addresses had been used in conjunction with NAT for the relevant internet access services. When NAT and private IPv4 addresses are used, once traffic has reached the public IPv4 address it is "diverted" to "underlying" private IPv4 addresses, with the result that the users or terminal equipment "behind" the public IPv4 addresses cannot be reached directly by "incoming" connections. This has no effect on the use of services for "outgoing" internet connections. However, it may cause problems for "incoming" internet connections because the individual end-user "behind" the public IPv4 address cannot be uniquely identified. The Bundesnetzagentur therefore assessed the general terms and conditions of various network

operators and consulted various internet access service providers. Companies from the gaming and smart home industries were also given the opportunity to state their views.

20. It turned out that the supply of public IPv4 addresses varies according to provider. Major internet access providers tend to have a sufficient amount of public IPv4 addresses as they are able to request enough of them in advance. Other providers, however, have few or no public IPv4 addresses, in some cases because they only took up this commercial activity at a time when public IPv4 addresses were already in short supply or no longer being issued. Some companies have increased their use of the newer IPv6 standard and acquired only a reduced number of IPv4 addresses. Public IPv4 addresses are currently only available on the secondary market.
21. In practice, technical solutions such as virtual private networks (VPN) or Port Control Protocol (PCP) were able to be used for the connectivity problems. However, these problems can only be solved completely when all internet access services and all terminal equipment have been migrated to IPv6. As long as IPv4 and IPv6 are being used in parallel, full connectivity can only be achieved if end-users are allocated both a public IPv4 address and a public IPv6 address. Given the shortage of public IPv4 addresses, this is not possible in all cases, particularly for providers that are no longer able to apply for public IPv4 addresses from RIPE.
22. The Bundesnetzagentur intends to take a differentiated approach to enable adequate connectivity while taking account of the IPv4 exhaustion and not obstructing the migration to the IPv6 standard:
  - Internet access providers with sufficient IPv4 addresses are required to provide these to customers on request, but these do not have to be static IPv4 addresses. It is sufficient to issue a dynamic IPv4 address. The requirement for these companies to issue IPv4 addresses will not apply once IPv4 has become obsolete as a technical standard, ie when the IETF has classed it as "historic". In practice, several of these providers are already voluntarily providing public IPv4 addresses to their customers on request.
  - Internet access providers without sufficient IPv4 addresses – mostly small or medium-sized providers – are not required to provide public IPv4 addresses on request, but they must provide their customers with other, economically reasonable technical solutions (such as PCP) to improve connectivity. What is economically reasonable for an internet access service provider must be decided on a case-by-case basis. An appropriate fee may be charged for the provision of alternative technical solutions.

#### *Exclusion of the use of VoIP*

23. There was a very low number of complaints in the reporting period about tariffs in which the internet access provider has excluded the use of voice over IP (VoIP) services. In the previous reporting period, the Bundesnetzagentur had made clear in a workshop that any exclusion of specific uses was a fundamental infringement of end-user rights under Article 3(1) and thus

a clear breach of the Regulation. This is likely to have contributed to providers changing their previous practice in most cases.

24. Thus, there was only one complaint about a provider contractually prohibiting the use of VoIP in a tariff. The Bundesnetzagentur intervened and the provider subsequently amended the contract terms.

#### *Inapplicability of the Regulation*

25. Investigations showed that Regulation (EU) 2015/2120 did not apply to a few consumer complaints. The problems end-users had experienced in using certain services were outside the scope of internet access services, either at the level of content service ("over the top" services), IP interconnection, or terminal equipment.
26. Some complaints related to cases in which the restricted usability of services was caused by the design of these services. For example, in the use of e-mail services, e-mails from some domains were delivered correctly but not saved in the recipient's in-box. The end-user mistakenly believed that the e-mails had been deleted because of the internet access provider's spam policy. However, it was found that the restrictions had been imposed by the provider of the e-mail service (a content service) in the e-mail server.
27. The use of services can also be affected by content providers' different IP interconnection agreements. One end-user complained that the connection to a particular server got significantly worse over the course of the day. The problem did not occur when using a VPN. The end-user also pointed out that content from major content providers such as Google achieved higher data transmission rates than content from smaller providers. The end-user suspected that this was due to a manipulation of data traffic by the internet access provider. However, the problems were related to IP interconnection, which is not subject to regulation.<sup>4</sup>
28. Other complaints concerned the restricted usability of services due to restrictions in terminal equipment. One end-user, for example, was unable to use the media server of their internet access service provider after updating their router. The update of the router manufacturer no longer supported a particular function (the use of the media server). Regulation (EU) 2015/2120 did not apply in this case, either.
29. In the last reporting period, there had already been individual complaints about restrictions on the use of applications in terminal equipment provided by the internet access provider. The Bundesnetzagentur therefore continued to look at this topic in the current reporting period. The extent to which end-users are restricted in their access to digital services, content and information because of the design of terminal equipment and operating systems is an increasingly important issue that can jeopardise competition between content providers and diversity of opinion.

---

<sup>4</sup> See *BEREC Report on IP-Interconnection practices in the Context of Net Neutrality*, BoR (17) 184, 2017.

30. The design of end-users' terminal equipment and/or operating systems can restrict their access to digital services, content and information. Default settings on terminal equipment (eg pre-installed apps, content or service filters, and firmware subsequently provided by service providers) can have an effect on the services and information available and used. Restrictions may also be caused by operating systems, search engines or app stores. Manufacturers may promote a further restriction of the information and consumption patterns of consumers with the development and spread of voice assistants, which generally only provide one answer to a consumer's question.
31. However, the Bundesnetzagentur currently only has limited options to intervene in such cases. In the complaints to date, the complainants had alleged that this was a breach of the net neutrality provisions. Regulation (EU) 2015/2120 was not applicable as these cases did not involve measures that occurred within the internet access service or that restricted end-users in their right to use the terminal equipment of their choice. Rather, the restrictions were caused by the configurations of the terminal equipment (routers) that the internet access service customer was offered by the access provider in connection with the internet access service. The subscribers were free to use their own routers, whose use did not result in these restrictions. The internet access service itself was thus not affected. The same applies in cases of restrictions in operating systems, search engines or app stores; these are also not part of the internet access service.
32. End-users are still free to choose which terminal equipment to use, so the regulations on this freedom have not been breached. In cases where restrictions are caused by terminal equipment, the Bundesnetzagentur can only draw on its general powers of intervention (sections 18 and 42 TKG), the requirements for which are stringent.
33. From the end-user's point of view, it makes no difference whether a service is unusable because of a restriction in the terminal equipment or its operating system or because of a restriction on the internet. In other words, access to digital services can be restricted even if the net neutrality regulations are complied with – something that has considerable practical significance for end-users given the variety of terminal equipment available (PCs, tablets and smart phones, plus increasingly also smart TVs, voice assistants etc).

## 1.2. Traffic management - Article 3(3)

### **Article 3(3) Regulation (EU) 2015/2120**

*Providers of internet access services shall treat all traffic equally, when providing internet access services, without discrimination, restriction or interference, and irrespective of the sender and receiver, the content accessed or distributed, the applications or services used or provided, or the terminal equipment used.*

*The first subparagraph shall not prevent providers of internet access services from implementing reasonable traffic management measures. In order to be deemed to be reasonable, such measures shall be transparent, non-discriminatory and proportionate, and shall not be based on commercial considerations but on objectively different technical quality of service requirements of specific categories of traffic. Such measures shall not monitor the specific content and shall not be maintained for longer than necessary.*

*Providers of internet access services shall not engage in traffic management measures going beyond those set out in the second subparagraph, and in particular shall not block, slow down, alter, restrict, interfere with, degrade or discriminate between specific content, applications or services, or specific categories thereof, except as necessary, and only for as long as necessary, in order to:*

*(a) comply with Union legislative acts, or national legislation that complies with Union law, to which the provider of internet access services is subject, or with measures that comply with Union law giving effect to such Union legislative acts or national legislation, including with orders by courts or public authorities vested with relevant powers;*

*(b) preserve the integrity and security of the network, of services provided via that network, and of the terminal equipment of end-users;*

*(c) prevent impending network congestion and mitigate the effects of exceptional or temporary network congestion, provided that equivalent categories of traffic are treated equally.*

34. During the reporting period, the Bundesnetzagentur started various investigations into possible infringements of the principle of equal treatment of data traffic pursuant to Article 3(3).

#### *Video throttling in the "StreamOn" zero-rating offer*

35. The Bundesnetzagentur prohibited the use of video throttling as part of "StreamOn" by decision of 15 December 2017 (see Net Neutrality Annual Report 2017/2018, paragraphs 17-20 and 36 for more details). Telekom Deutschland GmbH appealed the decision in both summary proceedings and principal proceedings.

36. The company's aim in the summary proceedings is to have the enforcement of the decision suspended. As Bundesnetzagentur orders are immediately enforceable (see section 137(1) TKG), companies wishing to prevent immediate enforcement have to appeal the order itself and apply for interim relief at the same time. On 20 November 2018, Cologne Administrative Court dismissed Telekom Deutschland GmbH's application for interim relief. A summary

examination showed the ban on video throttling was lawful. The overwhelming evidence was that the complainant's reduction of bandwidth to no more than 1.7 Mbit/s for video traffic was a breach of the principle of equal treatment for all data traffic laid down in Article 3(3), according to the court. Such a breach is not ruled out just because the reduction of bandwidth was based on a contractual arrangement between the internet access provider and end-user. Article 3(3) also applies within the scope of contractual relations (see Article 3(2)). The reduction of bandwidth is not a reasonable, and therefore permissible, form of traffic management pursuant to Article 3(3) second subparagraph. Rather, all indications are that it was based on commercial considerations.

37. Telekom Deutschland GmbH appealed to the Higher Administrative Court of North Rhine-Westphalia against the ruling of the Cologne Administrative Court. The Higher Administrative Court has not yet issued a final ruling on the case, but it has issued an intermediate decision preventing the Bundesnetzagentur from enforcing its order until the summary proceedings are final because of the potentially serious economic impact the enforcement could have on Telekom Deutschland GmbH. It judged that it was appropriate to uphold the company's rights until the decision on the summary proceedings was final for reasons of effective legal redress. Neither the intermediate decision nor the subsequent final decision of the Higher Administrative Court in Münster on the summary proceedings can be further contested.
38. The principal proceedings in the court of first instance, which will decide on whether the order of 15 December 2017 is lawful, are still pending at the Administrative Court in Cologne. They may be contested in three courts: the Administrative Court, the Higher Administrative Court of North Rhine-Westphalia, and the Federal Administrative Court. It is also possible that one of the administrative courts could refer a legal question to the European Court of Justice. It could therefore be some time before the legal dispute is concluded.

#### *Other types of blocking*

39. In one case, an end-user complained that certain streaming portals, such as Kinox.to, were blocked from their Vodafone cable internet access. The Bundesnetzagentur had investigated a similar case *ex officio* in the previous reporting period. In the present case, too, the Bundesnetzagentur found that Vodafone's action was justified under Article 3(3) third subparagraph point (a).

#### *Traffic management not leading to unequal treatment of data traffic within a tariff*

40. Traffic management that does not lead to the unequal treatment of data traffic within a tariff does not breach the principle of equal treatment of all data traffic laid down in Article 3(3) third subparagraph. The best-known example of a traffic management measure that treats all traffic equally is when the data transmission rate is reduced once the data

included in a mobile tariff has been used up. Throttling is used, but it does not lead to unequal treatment within a tariff. On the contrary, all types of traffic are throttled once the included data has been used up. Article 3(2) permits agreements on commercial and technical conditions and the characteristics of internet access services such as speed. There is also no breach of the principle of equal treatment of all data traffic pursuant to Article 3(3) in this case, because the throttling is "application-agnostic" within a tariff, ie affecting all traffic equally. This is the difference between this sort of traffic management measure and discriminatory measures like video throttling that disadvantage video traffic over other kinds of traffic within a tariff.

41. The Bundesnetzagentur examined various tariffs during the reporting period in which providers impose traffic management measures but these do not lead to the unequal treatment of data traffic within a tariff. They are actually appropriate in a particular situation. The traffic management measure does not distinguish between different types of traffic. No intervention was necessary in these cases as the principle of equal treatment of all data traffic pursuant to Article 3(3) had not been breached. Only the transparency requirements from Article 4(1) first sentence point (a) apply to the traffic management measures in these cases (see paragraphs 58- 60).
42. Examples of traffic management measures that do not discriminate between different types of traffic are certain mobile-based fixed-line substitute products (see paragraphs 43-45) and the use of private IPv4 addresses and NAT (see paragraph 46 on the assessment pursuant to Article 3(3) and paragraphs 19-22 on the assessment pursuant to Article 3(2)).

#### *Mobile-based and hybrid fixed-line substitute products*

43. The Bundesnetzagentur has examined various mobile-based and hybrid fixed-line substitute products. In one case, a provider contacted the Bundesnetzagentur about designing its product in a legally sound manner. Mobile-based fixed-line substitute products enable end-users to use an internet access service via a fixed or mobile LTE router. In the case of mobile-based fixed-line substitute products, the internet is only accessed using a mobile connection. In the case of hybrid fixed-line substitute products, the internet is generally accessed using a fixed line, with the additional use of mobile technology permitting higher data transmission rates to be achieved.
44. There are mobile-based and hybrid fixed-line substitute products on the market that offer customers in case of congestion less capacity or capacity as a lower priority than pure mobile customers. This can lead to some services, particularly ones that use a lot of data, being restricted or not usable at all. However, within these tariffs all data traffic is treated equally, ie the lower-priority or reduced capacity allocation affects all types of data equally, so the principle of equal treatment of data traffic is not breached.
45. The Bundesnetzagentur has not yet received any complaints about these tariffs. If the Bundesnetzagentur were to receive considerable numbers of complaints and its investigations showed that customers on such tariffs were only receiving very low data



transmission rates, with their end-user rights being seriously restricted, it would be possible to intervene pursuant to Article 5(1). One option would be to set minimum quality of service requirements, ie a minimum data transmission rate for these tariffs. However, the Bundesnetzagentur does not view this measure to be necessary at the current time.

#### IPv4/NAT

46. The use of IPv4/NAT is also a traffic management measure but one that does not treat data traffic within a tariff unequally. Rather, all the traffic in a tariff is subject to NAT, which is application agnostic and does not distinguish between types of tariff. Therefore, the use of IPv4/NAT is not in contravention of Article 3(3), regardless of the examination pursuant to Article 3(2) in conjunction with Article 3(1) (see paragraphs 19-22).

### 1.3. Data protection and obligations for the protection of privacy - Article 3(4)

#### **Article 3(4) Regulation (EU) 2015/2120**

*Any traffic management measure may entail processing of personal data only if such processing is necessary and proportionate to achieve the objectives set out in paragraph 3. Such processing shall be carried out in accordance with Directive 95/46/EC of the European Parliament and of the Council. Traffic management measures shall also comply with Directive 2002/58/EC of the European Parliament and of the Council.*

47. In Germany, both the Federal Commissioner for Data Protection and Freedom of Information (BfDI) and the Bundesnetzagentur were responsible for monitoring the data protection obligations in line with telecommunications law during the reporting period. The two authorities share supervisory responsibility (section 115(4) TKG), but the executive powers lay with the Bundesnetzagentur, at least until 25 May 2018 (see also paragraph 49).
48. If the BfDI becomes aware of any violation of data protection provisions, it can inform the Bundesnetzagentur. The Bundesnetzagentur can then enforce the data protection obligations by way of an administrative procedure and/or can punish any offences by administrative fines. Moreover, there is a formal cooperation process between the Bundesnetzagentur and the BfDI for the obligatory filing of personal data breaches pursuant to Article 4(3) of the E-Privacy Directive<sup>5</sup> (transposed into German law in section 109a TKG), thus the two authorities inform one another as soon as they receive notification of breaches of data privacy by a provider of internet access services.
49. On 25 May 2018, the General Data Protection Regulation (Regulation (EU) 2016/679; GDPR) of the European Parliament and of the Council replaced Directive 95/46/EC. As the Regulation is directly applicable, the BfDI is now solely responsible for monitoring data

<sup>5</sup> Directive 2002/58/EC, amended by Directives 2006/24/EC and 2009/136/EC, for a consolidated version see <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2002L0058:20091219:EN:PDF>.

protection in telecommunication services in the field of "customer data" (the data of a subscriber collected for the purpose of establishing, framing the contents of, modifying or terminating a contract for telecommunications services; section 3 para 3 TKG). The joint responsibility of the BfDI and the Bundesnetzagentur in the field of "traffic data" (data collected, processed or used in the provision of a telecommunications service; section 3 para 30 TKG) is in principle unchanged because the data protection rules in Part 7 TKG are still based primarily on Directive 2002/58/EC of the European Parliament and of the Council (E-Privacy Directive), which, under Article 95 GDPR, the GDPR does not take precedence over.

50. The E-Privacy Regulation, which is currently being discussed at a European level, is likely to replace the E-Privacy Directive. The E-Privacy Regulation will probably also lead to changes in data protection supervision in Germany. The European Parliament elections in May 2019 and the pending appointment of a new European Commission in autumn 2019 are likely to delay the discussions, so the E-Privacy Regulation is not expected to come into force in the near future.

#### **1.4. Services other than internet access services (specialised services) - Article 3(5)**

##### **Article 3(5) Regulation (EU) 2015/2120**

*Providers of electronic communications to the public, including providers of internet access services, and providers of content, applications and services shall be free to offer services other than internet access services which are optimised for specific content, applications or services, or a combination thereof, where the optimisation is necessary in order to meet requirements of the content, applications or services for a specific level of quality.*

*Providers of electronic communications to the public, including providers of internet access services, may offer or facilitate such services only if the network capacity is sufficient to provide them in addition to any internet access services provided. Such services shall not be usable or offered as a replacement for internet access services, and shall not be to the detriment of the availability or general quality of internet access services for end-users.*

51. No complaints about specialised services were addressed to the Bundesnetzagentur, nor were there enquiries from providers of internet access services about business models including specialised services.
52. The Bundesnetzagentur held talks with three mobile network operators in Germany about the possible introduction of specialised services in the 5G networks. A major element of the new mobile communication standard is the use of network slicing, which allows the physical network infrastructure to be divided into different, separate virtual networks that can be individually optimised for the requirements of special applications. The use of specialised services is thus a particular focus of new business models linked to 5G. Various application scenarios and aspects of the technical implementation were discussed in the light of Article 3(5), Article 5 and the BEREC Guidelines. No application scenarios or business models that were in conflict with the provisions of Regulation (EU) 2015/2120 were identified. The

net neutrality provisions do not stand in the way of the potential areas of application for specialised services. The same conclusion was made in a study by the Netherlands Organisation for applied scientific research (TNO) with the involvement of the Netherlands Ministry of Economic and Climate Affairs, the Netherlands regulatory authority ACM, network operators and manufacturers.<sup>6</sup>

53. A question from the scientific field asked whether and how data traffic from drones could be prioritised for air traffic control purposes. The Bundesnetzagentur pointed out that it is permissible to prioritise data traffic if a service has particularly high requirements, eg because it is time-critical. This prioritisation might be classed as a specialised service pursuant to Article 3(5), for example, or could come under reasonable traffic management of the general internet access service pursuant to Article 3(3) second subparagraph.

## 2. Transparency measures – Article 4

### 2.1 Contractual arrangements – Article 4(1)

#### **Article 4(1) Regulation (EU) 2015/2120**

*Providers of internet access services shall ensure that any contract which includes internet access services specifies at least the following:*

*(a) information on how traffic management measures applied by that provider could impact on the quality of the internet access services, on the privacy of end-users and on the protection of their personal data;*

*(b) a clear and comprehensible explanation as to how any volume limitation, speed and other quality of service parameters may in practice have an impact on internet access services, and in particular on the use of content, applications and services;*

*(c) a clear and comprehensible explanation of how any services referred to in Article 3(5) to which the end-user subscribes might in practice have an impact on the internet access services provided to that end-user;*

*(d) a clear and comprehensible explanation of the minimum, normally available, maximum and advertised download and upload speed of the internet access services in the case of fixed networks, or of the estimated maximum and advertised download and upload speed of the internet access services in the case of mobile networks, and how significant deviations from the respective advertised download and upload speeds could impact the exercise of the end-users' rights laid down in Article 3(1);*

*(e) a clear and comprehensible explanation of the remedies available to the consumer in accordance with national law in the event of any continuous or regularly recurring discrepancy*

<sup>6</sup> TNO 2018 R10394 | 1.0 - 13 April 2018 - 5G and Net Neutrality: a functional analysis to feed the policy discussion, <https://www.tno.nl/en/about-tno/news/2018/4/5g-net-neutrality-a-tno-study/>.

*between the actual performance of the internet access service regarding speed or other quality of service parameters and the performance indicated in accordance with points (a) to (d);*

*Providers of internet access services shall publish the information referred to in the first subparagraph.*

54. With respect to the transparency measures under Article 4(1), the complaints addressed to the Bundesnetzagentur particularly concerned the discrepancy between the actual performance and the contractually agreed download speeds referred to in Article 4(1) first sentence point (d). The majority of these complaints involved fixed networks and only a few related to mobile networks.
55. The Bundesnetzagentur deals with these complaints on broadband speed discrepancies following the complaints procedure (see section 2.2) and taking into account, since April 2017, the Bundesnetzagentur's draft administrative notice specifying the undefined legal terms used in Article 4(4) ("significant discrepancy, continuous or regularly recurring [...] regarding speed") and, since July 2017, its final administrative notice on this (see paragraphs 72-78).
56. Where providers applied admissible traffic management measures, the Bundesnetzagentur endeavoured to ensure appropriate transparency in the contractual information. A contract must contain information on traffic management measures both when a measure results in the unequal treatment of traffic within a tariff and when a measure does not result in unequal treatment within a tariff but equally affects all categories of traffic in a specific situation or when a specific data volume is reached.
57. During the reporting period, traffic management resulting in the unequal treatment of traffic within a tariff involved above all the unequal treatment of data traffic in the cases of exception laid down in Article 3(3) third subparagraph points (a) to (c). The providers of internet access services assessed by the Bundesnetzagentur in the reporting period each include general clauses in their general terms and conditions that reserve the right to treat internet traffic unequally in these exceptional situations. The providers' end-users thus have sufficiently transparent information about the possibility that data traffic may be slowed down, for instance in the event of congestion, or that internet pages may be blocked following a court ruling (see paragraph 39). It was therefore not necessary for the Bundesnetzagentur to intervene.
58. During the reporting period, better transparency was also achieved in the contractual information about traffic management measures resulting in the equal treatment of traffic within a tariff. Examples include the application-agnostic use of IPv4/NAT (see paragraph 46 on the assessment under Article 3(3) and paragraphs 19-22 on the assessment under Article 3(2)) and the lower priority given when assigning resources in mobile communications to mobile-based or hybrid fixed-line substitute products compared to pure mobile tariffs (see paragraphs 43-45). In these cases, the measure results in intervention in the traffic, but traffic within each tariff is treated equally.

59. In cases relating to IPv4/NAT, the Bundesnetzagentur examined the larger providers' tariffs for sufficient transparency. Most of the larger providers had already sufficiently described the impact on the quality of the internet access service (ie that unrestricted accessibility cannot be guaranteed and thus specific types of use are not possible when private IP addresses are used). In other cases, providers modified their contractual information following a dialogue with the Bundesnetzagentur.
60. If, in the event of congestion, a provider assigns fewer resources to mobile-based or hybrid fixed-line substitute products than to pure mobile tariffs, the provider must describe the possible impact on the quality of the internet access service. The contractual clauses must therefore clearly state that the mobile data transmission rate for such tariffs will be slowed down compared to pure mobile tariffs and that this may prevent or restrict the use of – in particular data-intensive – services.
61. No complaints about the transparency requirements under Article 4(1) first sentence points (b), (c) and (e) were addressed to the Bundesnetzagentur during the reporting period.

*Report in accordance with section 43a(3) third sentence para 1 TKG*

62. In accordance with section 43a(3) third sentence para 1 TKG, the Bundesnetzagentur publishes an annual report on its surveys and findings that presents, in particular, the extent to which providers of publicly accessible telecommunication services provide the information required under section 43a(2) TKG and Article 4(1) of the Regulation.
63. The Bundesnetzagentur takes action, in particular in response to complaints (complaint-based approach). Moreover, the Bundesnetzagentur makes spot checks of the corresponding wording of the providers in their general terms and conditions and service descriptions, for instance when it examines new tariffs or following media reports.
64. Based on these checks, the following picture has emerged for the Bundesnetzagentur: during the reporting period, fixed network providers have increasingly provided information on the speeds as referred to in Article 4(1)(d) in their general terms and conditions. The providers typically refer to specific figures for the respective speeds or express them as a percentage of the maximum speed. Advertised speeds typically correspond to maximum speeds. During the reporting period, mobile providers also increasingly provided information on the corresponding speeds in their general terms and conditions. The providers also increasingly describe the impact of traffic management measures (where they are applied and have been deemed admissible by the Bundesnetzagentur) on the internet access service.

## 2.2 Complaints procedure – Article 4(2)

### **Article 4(2) Regulation (EU) 2015/2120**

*Providers of internet access services shall put in place transparent, simple and efficient procedures to address complaints of end-users relating to the rights and obligations laid down in Article 3 and paragraph 1 of this Article.*

65. The Bundesnetzagentur consumer advice service has designed a standard complaints procedure, which it has presented to the industry. In particular, this procedure governs the formal requirements of a complaint in the event that the contractually agreed speeds are not achieved. Internet access service providers were asked to provide the Bundesnetzagentur with the name of a contact person so that the Bundesnetzagentur can deal with consumer complaints relating to Article 4, especially those concerning the speed of internet access, as well as issues and complaints on contractual transparency. Most providers of internet access services have designated a contact person.

### *Number of complaints*

66. The Bundesnetzagentur forwards complaints from end-users, for which no solution has been reached between the end-user and the internet access provider, to the provider. To ensure that only substantiated complaints are forwarded, the Bundesnetzagentur asks the consumer to measure the speed of their internet access service in advance, at least 20 times, using the Bundesnetzagentur's "Breitbandmessung" broadband speed checker (see paragraph 77). In the relevant reporting period, around 200 substantiated complaints under the terms of Article 4(4) were submitted. In the previous reporting period, there had been fewer than 50.

67. Moreover, it is possible to submit a request for a dispute settlement procedure to the Bundesnetzagentur.

68. The Bundesnetzagentur is not able to force a provider to terminate a contract prematurely or to compensate the consumer, but it carefully monitors the solutions offered by the provider.

69. Legal remedies for consumer claims for damages are governed by civil law. No specific, additional remedies for consumer redress have been introduced for net neutrality.

70. At the same time, a rise in general queries and complaints concerning this issue has been recorded. The Bundesnetzagentur is monitoring the number of end-user complaints on the speed of internet access services. Whereas in 2015 and 2016, the Bundesnetzagentur received between 150 and 300 complaints each year, during the reporting period about 1,500 queries and complaints were received about this issue.

However, these figures must be seen in relation to the total number of queries and complaints received each year. An exact statistical assessment of the complaints or a

direct comparison of the statistics is difficult because in many of the consumer complaints different types of problems are mixed or several matters are addressed at once. Generally, it cannot be ruled out that the increased interest is due, among other things, to the publication of the administrative notice specifying the undefined legal terms "significant discrepancy, continuous or regularly recurring" used in Article 4(4) (see paragraphs 72-78) and to the increased use of the broadband speed checker.

### 2.3 Monitoring mechanism – Article 4(4)

#### **Article 4(4) Regulation (EU) 2015/2120**

*Any significant discrepancy, continuous or regularly recurring, between the actual performance of the internet access service regarding speed or other quality of service parameters and the performance indicated by the provider of internet access services in accordance with points (a) to (d) of paragraph 1 shall, where the relevant facts are established by a monitoring mechanism certified by the national regulatory authority, be deemed to constitute non-conformity of performance for the purposes of triggering the remedies available to the consumer in accordance with national law.*

*This paragraph shall apply only to contracts concluded or renewed from 29 November 2015.*

71. In its Guidelines, BEREC clearly set out that a monitoring mechanism provided by a national regulatory authority and implemented for the purpose of Article 4(4) should be considered a certified monitoring mechanism (see BEREC Guidelines, paragraph 161). Thus the Bundesnetzagentur considers its "Breitbandmessung" broadband speed checker to be such a certified monitoring mechanism. Additional information on the Bundesnetzagentur's broadband measurement tool is given in paragraphs 85-98.

#### *Administrative notice clarifying the undefined legal terms*

72. In the last reporting period, the Bundesnetzagentur held a consultation on a draft administrative notice clarifying the undefined legal terms in Article 4(4) ("significant discrepancy, continuous or regularly recurring [...] regarding speed"). The final administrative notice was published on 4 July 2017.

73. The notice applies to download speeds of fixed broadband connections and makes the legal terms more manageable for end-users in asserting their rights vis-à-vis their internet access service providers. The intention is to hold internet access providers accountable for the speeds that are stated in the contract and advertised.

74. The notice firstly addresses the substance of the undefined legal terms in Article 4(4) and, secondly, lays down guidelines for the verification process using the

Bundesnetzagentur's monitoring mechanism ("Breitbandmessung" broadband measurement tool).

75. In the Bundesnetzagentur's view, a significant discrepancy, continuous or regularly recurring in download speeds of fixed broadband connections within the meaning of Article 4(4) is deemed to exist if:
1. 90% of the contractually agreed maximum speed is not achieved at least once on at least two measurement days;
  2. the normally available speed is not achieved in 90% of the measurements; or
  3. the speed falls below the contractually agreed minimum on at least two measurement days.
76. The occurrence of such a discrepancy in one of these cases suffices for the finding of a significant discrepancy, continuous or regularly recurring, in the download speed and thus non-compliance with the contractually agreed performance.
77. The Bundesnetzagentur deems the following requirements necessary regarding the scope and type of measurements when using the broadband speed checker in the verification process (see paragraph 71):
1. At least 20 measurements must be made.
  2. The measurements must be made on at least two separate days.
  3. The number of measurements is to be spread equally over the two days, so that at least 10 measurements are made on each day.
  4. The measurements must be made using a LAN connection.
  5. The measurements are to be carried out using the installable version of the broadband speed checker.

In addition, the Bundesnetzagentur's recommendations for carrying out measurements are to be observed.

78. The installable version (desktop app) was published on 2 May 2018 and since then has been available for download from the "Breitbandmessung" website. Earlier, in July 2017, the Bundesnetzagentur had held a workshop with stakeholders on the intended installable version, where the requirements of an installable version and the parameters to be included were discussed. Also during the workshop, the recommendations envisaged by the Bundesnetzagentur were addressed. Moreover, all interested parties were given ample opportunity before the introduction of the desktop app to state their opinion and to carry out tests.

*Report in accordance with section 43a(3) third sentence para 2 TKG*

79. In accordance with section 43a(3) third sentence para 2 TKG, the Bundesnetzagentur publishes an annual report on its surveys and findings that presents, in particular, the



extent to which significant discrepancies, continuous or regularly recurring, were determined between the quality of service measured under section 43a(3) second sentence TKG and the information given in the contract as required under Article 4(1) first subparagraph point (d) of the Regulation.

80. In the period from the beginning of May 2018 to the end of April 2019, approximately 8,800 users of the desktop app carried out one or more sets of measurements that meet the Bundesnetzagentur's requirements regarding the scope and type of measurements (see paragraph 77). More than 75% of the users recorded at least one of the discrepancies described above (see paragraph 75).

#### 2.4 Additional legislative measures – Article 4(3)

##### **Article 4(3) Regulation (EU) 2015/2120**

*The requirements laid down in paragraphs 1 and 2 are in addition to those provided for in Directive 2002/22/EC and shall not prevent Member States from maintaining or introducing additional monitoring, information and transparency requirements, including those concerning the content, form and manner of the information to be published. Those requirements shall comply with this Regulation and the relevant provisions of Directives 2002/21/EC and 2002/22/EC.*

81. At the national level, additional transparency requirements were adopted during the previous reporting period by way of an ordinance on the promotion of transparency in the telecommunications market ("transparency ordinance"). This ordinance regulates the publication of information and additional measures for cost control on the telecommunications market.
82. The transparency ordinance entered into force on 1 June 2017. It requires fixed network and mobile providers to provide more transparency when offering internet access services.
83. Providers of internet access services must provide product information sheets where the consumer can quickly see the essential contractual provisions in a simple way before concluding the contract. The product information sheet contains details of the available data transmission rates, the term of the contract and the monthly costs. Consumers are also informed of the contractually agreed data allowance (if relevant).<sup>7</sup>
84. Moreover, consumers have the right to inform themselves of the quality of their internet access service using reliable measurement results, in particular regarding the available data transmission rates and how the rates achieved compare to the contractually agreed maximum speed. The annex to the ordinance sets out the format for this information. The provider of the internet access service must therefore inform the consumer of

---

<sup>7</sup> Sample product information sheet: [www.bundesnetzagentur.de/tk-transparenzverordnung](http://www.bundesnetzagentur.de/tk-transparenzverordnung).

possible means of measuring the speed, for example by referring to the Bundesnetzagentur's broadband speed checker (see <https://breitbandmessung.de>).

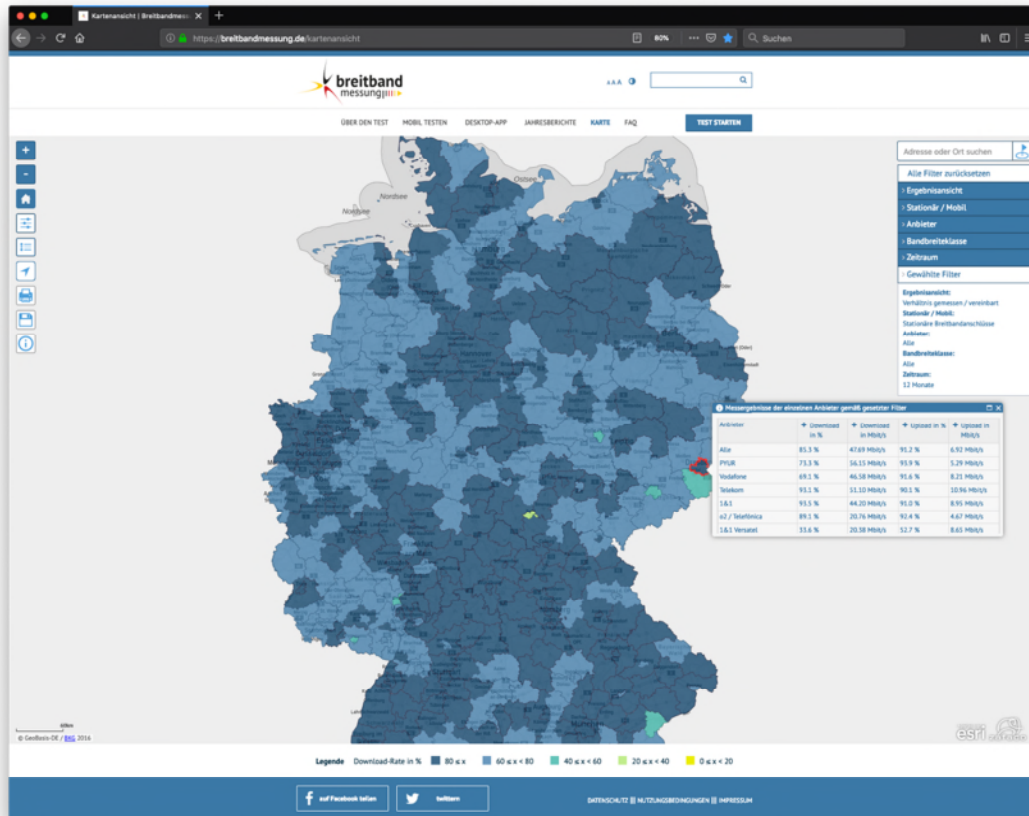
### 3. Supervision and enforcement – Article 5

**Article 5(1) first subparagraph Regulation (EU) 2015/2120**

*National regulatory authorities shall closely monitor and ensure compliance with Articles 3 and 4, and shall promote the continued availability of non-discriminatory internet access services at levels of quality that reflect advances in technology. For those purposes, national regulatory authorities may impose requirements concerning technical characteristics, minimum quality of service requirements and other appropriate and necessary measures on one or more providers of electronic communications to the public, including providers of internet access services.*

#### *Broadband speed tests*

85. The Bundesnetzagentur provides a monitoring mechanism, the "Breitbandmessung", which allows consumers to monitor the quality and performance of their broadband internet access. A browser-based test or an installable version (desktop app) can be used for fixed-line broadband and an app-based one (Android and iOS) for mobile connections. The measurement process used in the actual testing is technically identical for both fixed and mobile connections. The test measures the data transmission rate in both the download and upload directions. The measurement result is presented as an absolute value and as a relative value for the contractually agreed speed. Thus, the monitoring mechanism allows the data transmission rate actually measured of a broadband connection to be compared with the maximum data transmission rate contractually agreed. In addition, the delay and packet loss parameters are measured. However, only the time delay is presented to the end-user.
86. The monitoring mechanism is used to collect test samples via crowdsourcing. The results are presented in an annual report on broadband measurement. The third annual report was published on 13 March 2019.
87. Furthermore, the end-user can see in a map view the data transmission rates measured in specific regions; these are displayed as NUTS-3 clusters and in grid cells. Whereas the annual report on the broadband measurement is for a fixed time period, the maps are updated daily and show the results of the previous 6, 12 and 24 months, as well as for the entire period from the start of the tests.

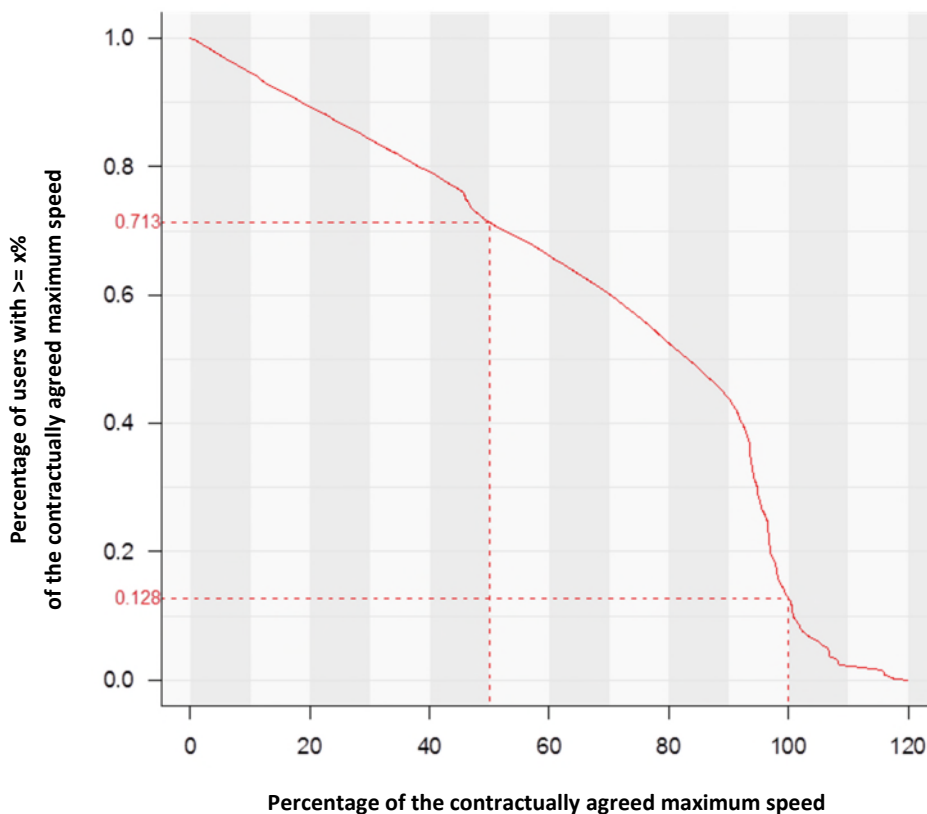


Example of the map displaying aggregate results.

88. It is important to note that the results obtained using the broadband speed test depend on the end-user that is performing the test and the tariff that they have agreed with their provider. It is therefore not possible to draw conclusions from the results about broadband coverage or the availability of broadband internet access.
89. For the purposes of the broadband speed tests, a drop-down list of providers' tariffs is drawn up using the tariff data reported by the telecommunications companies. The users then select their individual tariff from the drop-down list before carrying out their tests.
90. The test sample is validated in an extensive process. In particular, any possible cause of measurement errors due to the end-user's environment is excluded as far as possible by using both technical information and information provided by the end-user. More precisely, where end-users state that tests have been carried out in a suboptimal environment (in particular via WLAN or with parallel data traffic), these tests are excluded. Tests using the app also include technical data that allow the identification of tests carried out via WLAN; these tests are also excluded.
91. Furthermore, multiple tests carried out on any fixed broadband connection are excluded for statistical reasons. Only one test per line and quarter is used for the report. Multiple tests on mobile broadband connections are kept in the sample due to the fact that even a minimal change in location may produce a completely different result.

*Main findings*

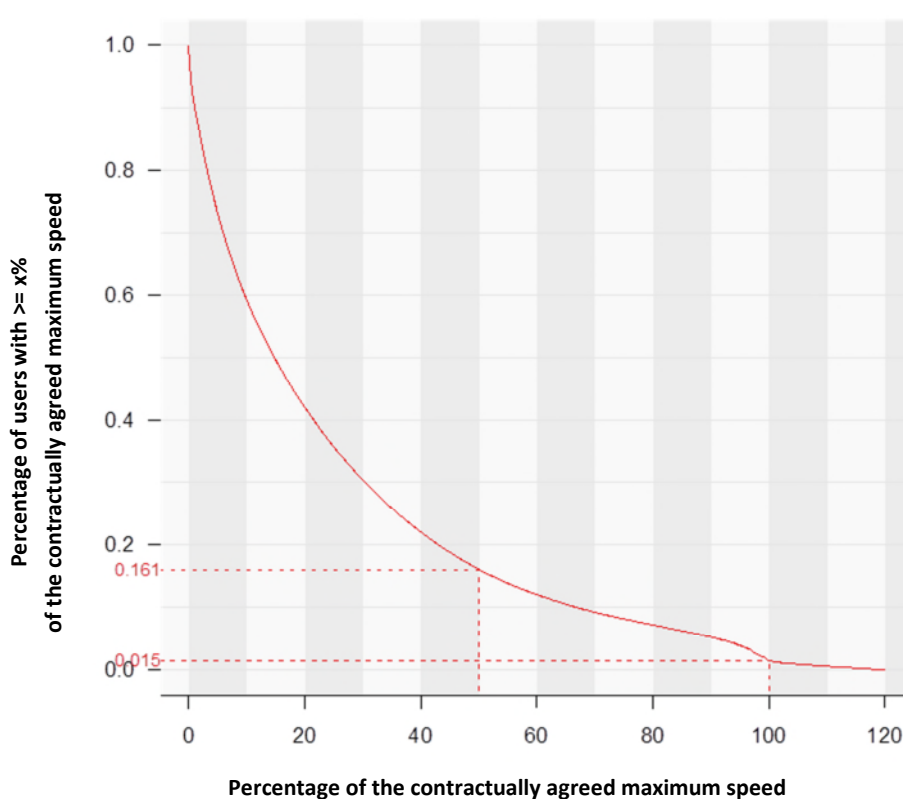
92. The third annual report covers a total of 900,579 valid tests on fixed broadband connections and 384,999 valid tests on mobile broadband connections that were carried out in the period from 1 October 2017 to 30 September 2018.
93. Fixed broadband lines: the proportion of users across all bandwidth categories and providers whose connection had a download speed at least half their contractually agreed maximum speed was 71.3%; the proportion of users whose connection had a speed equivalent to or higher than their contractually agreed maximum speed was 12.8%. These figures are more or less the same as in the previous twelve-month period (2016-2017: 71.6% with at least half and 12% with at least their full agreed maximum speeds).



94. The results were again mixed as regards bandwidth categories, providers and the time of day. Based on the speeds measured as a percentage of the contractually agreed speeds, upload performance was again better than download performance. Some 87.6% of users across all bandwidth categories and providers recorded a latency lower than or equal to 40 ms, again more than in the previous twelve-month period (2016-2017: 83.7%). Lower latency times were again recorded in higher bandwidth categories.
95. The majority of users were again satisfied with the performance of their providers (1 to 3 on a scale of 1 to 6), although there was a slight decrease in the proportion of satisfied users (62% compared to 64.2% in 2016-2017). Users were asked to rate their satisfaction

before carrying out the speed tests. As in the previous twelve-month period, it emerged that the actual speeds measured by satisfied users were closer to their contractually agreed maximum speeds.

96. Mobile broadband connections: as in the previous twelve-month period, mobile broadband performance was considerably lower than fixed-line broadband. The proportion of users across all bandwidth categories and providers whose connection had a download speed at least half their contractually agreed estimated maximum speed was 16.1%; the proportion of users whose connection had a speed equivalent to or higher than their contractually agreed estimated maximum speed was 1.5%. Overall, these percentages are lower than in the previous twelve-month period (2016-2017: 18.6% with at least half and 1.6% with at least their full agreed estimated maximum speeds).



97. Again, the results differ with respect to bandwidth categories and providers. Based on the speeds measured as a percentage of the contractually agreed estimated maximum speeds, upload performance was similar to download performance and was slightly lower than in the previous twelve-month period. Overall, the latency measured on mobile broadband connections was noticeably higher than on fixed broadband connections, but lower than in the previous twelve-month period. Some 4.2% of mobile broadband users recorded a latency lower than or equal to 40 ms (2016-2017: 3.1%). Some 82.4% of users recorded a latency lower than or equal to 100 ms, compared to 75.2% in 2016-2017.

98. As in the previous twelve-month period, the large majority of users gave their providers a rating of 1 to 3 (on a scale of 1 to 6), although there was a decrease in the proportion of satisfied users (74.7% compared to 76.6% in 2016-2017). Users were asked to rate their satisfaction before carrying out the speed tests. The mobile broadband speeds measured as a percentage of the contractually agreed speeds were again low. This suggests that mobile broadband users still rate mobility and performance higher than actually receiving their advertised speeds.

#### *Enforcement measures*

99. It was not necessary to issue a decision to enforce Article 3 or Article 4 during the reporting period. In many cases, providers of internet access services voluntarily ceased infringements of the net neutrality provisions, whereas in others no infringement was detected. Some processes that were instigated in the reporting period are still pending.

#### *Report in accordance with section 43a(3) third sentence para 3 TKG*

100. With respect to discrepancies in service quality, especially regarding broadband speeds, the Bundesnetzagentur publishes an annual report in accordance with section 43a(3) third sentence para 3 TKG on its monitoring and findings that presents, in particular, the extent to which the requirements and measures under Article 5(1) first subparagraph second sentence of the Regulation are necessary and effective.

101. The Bundesnetzagentur did not implement any measures with respect to Article 4(1) during the reporting period.

#### 4. Penalties – Article 6

**Article 6 Regulation (EU) 2015/2120**

*Member States shall lay down the rules on penalties applicable to infringements of Articles 3, 4 and 5 and shall take all measures necessary to ensure that they are implemented. The penalties provided for must be effective, proportionate and dissuasive. Member States shall notify the Commission of those rules and measures by 30 April 2016 and shall notify the Commission without delay of any subsequent amendment affecting them.*

102. Infringements of Article 3 or Article 4 can be penalised by a fine in the following cases:

- traffic management measures that are not permitted under Article 3(3) third subparagraph first sentence: fines of up to €500,000;
- infringements of the transparency measures under Article 4(1) first sentence: fines of up to €100,000;
- infringement of an enforceable order issued by the Bundesnetzagentur: fines of up to €500,000; this may be imposed for any case of infringement of the net neutrality provisions of the Regulation (for example unlawful zero-rating offers or traffic management measures, or insufficient contractual information);
- failure to comply with information requests in accordance with Article 5(2): fines of up to €10,000.

103. Moreover, penalty payments of up to €500,000 can be imposed if a provider of internet access services does not comply with an official order (see section 126 TKG).

104. A fine imposed in regulatory offence proceedings serves as a sanction, whereas a penalty payment imposed in administrative proceedings serves to encourage the addressee to comply with an official order.