Body of European Regulators for Electronic Communications

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Report on the implementation of Regulation (EU) 2015/2120 and BEREC Net Neutrality Guidelines

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Contents

Executive Summary

This report gives an overview of the activities of the NRAs[1] in the course of implementing the net neutrality provisions of Regulation (EU) 2015/2120[2] and associated BEREC Net Neutrality Guidelines. This report reflects the third year of the application of the Regulation, covering the period from 1 May 2018 to 30 April 2019. BEREC has gathered information from 29 NRAs via an internal questionnaire. NRAs also published national reports on the third year of application of the Regulation. To this information, descriptions of publicly known net neutrality cases or investigations that arose throughout the 12-month reporting period have been added. However, this report does not in any case constitute an exhaustive description of the current actions in the field of net neutrality.

The information in this report is organized according to the provisions of the Regulation. This report shows that NRAs have actively implemented the Regulation. It is evident that during the third year of the application of the Regulation, the adoption of monitoring methods has increased as compared to the previous years. Moreover, quite a few NRAs have dealt with zero-rating and traffic management cases[3] and a handful of formal decisions were reached.

Concerning Article 3 of the Regulation regarding end-users' rights to open internet access, 'information requests to ISPs', the 'analysis of complaints or end-user reports' and 'market surveys without requesting information from ISPs' (e.g. checking ISPs' offers on their web pages) were almost equally used by most NRAs. Moreover, the majority of NRAs indicated that they combined all the above three sources of information to monitor the commercial and technical conditions related to the provision of internet access services. Zero-rating offers were identified by almost all (28) NRAs, with music/video streaming and social networking the most frequently mentioned types of applications being zero-rated. Traffic management practices were assessed formally by more than half of the NRAs, compared to only a small number in the previous reporting period. According to most NRAs, monitoring activities have become an on-going activity and the interaction with the ISPs evolves into a more mature phase.

Concerning Article 4 on monitoring ISPs' compliance to transparency and contractual terms, two out of three NRAs usually applied multiple methods and most commonly more than two. The top three activities used by NRAs to assess the ISPs' compliance with Article 4 were 'formal and informal requests for information from the ISPs', 'analysis of end-users' reports and complaints', as well as 'market surveys without requesting information from ISPs'. More than half of the NRAs have already set national specifications in relation to the different types of speed-related information required under Article 4 – maximum, normally available and minimum speed. In 1 out of 3 countries these speed requirements are legally binding. Even

[1] NRA is used in this report as reference to the National Regulatory Authority in the meaning of Article 5(1) of Regulation (EU) 2015/2120 as they have been designated by the national legislator. These do not fully correspond to the NRAs that are BEREC members and observers. See Question 1 below.

[2] This report refers as "the Regulation" to the net neutrality rules contained in 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.

[3] In cases that ISP names have already been made public, ISP names are also mentioned in this report. In all other cases, ISP names are not disclosed.

though ISPs have included speed information in their contracts in 3 out of 4 countries, in most cases their definitions are still rather vague and unclear. A great majority of the NRAs monitor end-user complaints regarding the performance of the IAS. Two thirds of the NRAs (19 out of 29) offer an IAS quality monitoring mechanism to consumers.

Concerning Article 5, the answers to the questionnaire indicated that a large majority of NRAs is monitoring the availability of high-speed internet access service, with the most popular approaches being either through information requests from ISPs or through analysis of complaints and end-user reporting. Technical network monitoring is in the third place.

1 General Questions

Question 1. Which types of activities has your NRA engaged in during 2018/19 in order to implement the Regulation (EU) 2015/2120? Please provide a brief account of:

i. internal activities (e.g. preparing new internal procedures, dedicating teams / FTE, etc.)
ii. external activities (e.g. press-release, meetings with stakeholders or ISPs, drafting national guidelines on enforcement policy, stimulating self-assessment or internal compliance by ISPs, adopting administrative orders/decisions or imposing administrative fines etc.)
iii. any other actions of note:

24 NRAs reported/provided updated information on internal activities. Actions identified by member states included, amongst others:

- dedicating and training interdisciplinary teams of lawyers, economists, consumer protection experts) and communication services technical experts;
- analysis of ISPs' implementation of the Regulation (e.g. reviewing the terms and conditions for internet access services and their online available information - at least with the biggest ISPs against the new obligations);
- (online) publication of information/recommendations/opinions for stakeholders and consumers;
- technical and non-technical surveys and monitoring;
- identifying required changes regarding existing legislation and rules of procedure.

Concerning external activities, almost all (28) NRAs reported to have been involved in such activities. Examples of activities were:

- holding meetings and workshops with stakeholders (e.g. ISPs, vendors, consumer organizations);
- publishing National measures, drafting Guidelines for ISPs or issuing Decisions on the establishment of quality indicators for the provision of the internet access service;
- conducting formal investigations on ISPs' traffic management practices;
- supervision of specific cases from an Article 3(2) perspective;
- educational campaigns to inform the public;
- providing monitoring tools for consumers;
- publication of decisions;
- imposing of administrative fines due to non-compliance with the Regulation;
- initiating studies;

- issuing press-releases.

A majority of NRAs have performed assessments of ISPs general terms and of ISPs agreements on commercial and technical conditions to establish the presence or the absence of a possible violation of Article 3(2) of the Regulation. Some NRAs initiated formal proceedings based upon these findings.

8 NRAs stated that they also undertook some other actions[4]:

- enhancements of the existing crowdsourcing monitoring tools for end-users;
- initiating legal activities, aiming to amend the national legal framework to better fit the Regulation;
- raising awareness for end-users through special educational papers / seminars / conferences;
- collaborating with academia in order for NRAs to enhance their diagnostic capabilities on traffic management issues.

Approach	**NRAs**	**Number**
Internal activities (e.g. preparing new internal procedures, dedicating teams / FTE, etc.)	AT, CY, CZ, DK, EE, EL, ES, HR, HU, IE, IT, LT, LU, LV, MT, NL, NO, PL, PT, RO, SE, SI, SK, UK	**24**
External activities (e.g. press-release, meetings with stakeholders or ISPs, drafting national guidelines on enforcement policy, stimulating self-assessment or internal compliance by ISPs, adopting administrative orders/decisions or imposing administrative fines etc.)	AT, BE, BG, CZ, DE, DK, EE, EL, ES, FI, FR, HR, HU, IE, IT, LT, LU, LV, MT, NL, NO, PL, PT, RO, SE, SI, SK, UK	**28**
Any other actions of note	CZ, EL, ES, FR, PT, RO, SE, SI	**8**

Table 1. NRA activities during 2018/19 in order to implement the Regulation (EU) 2015/2120

[4] Note that these other actions partly overlap with *internal* and *external activities*.

2 Article 3(1) and 3(2)

Question 2. What approach have you taken to monitor the commercial and technical conditions related to the provision of Internet access services:

i. market survey without requesting information from ISPs (e.g. checking the relevant information on the ISP' s web pages, such as the general terms and conditions)
ii. information request from ISPs
iii. analysis of complaints and end-user reporting
iv. technical network monitoring
v. other, please specify.

Is there any change compared to the previous period? If yes, please provide details.

Almost all NRAs used one or more of the above-mentioned techniques to monitor the commercial and technical conditions related to the provision of internet access services. A majority of NRAs used a market survey (24), sent information requests to ISPs (28) and undertook an analysis of complaints and end-user reports (24). A smaller number used technical network monitoring tools or said they were in the process of developing technical tools (9).

Examples of individual approaches by NRAs are: providing a platform for end-users to report problematic situations with ISPs; offering an application for traffic management detection; launching supervision measures; legal obligation of ISPs to notify their new or adapted terms and conditions; analysis of reports and complaints by vendors and ISPs; meetings with stakeholders; opening formal assessments on the free choice of terminal equipment; developing a system for monitoring QoS of fixed and mobile IAS; providing a traffic management detection application.

Approach	NRAs	Number
Market survey without requesting information from ISPs (e.g. checking ISP's offers on their web pages)	AT, BE, BG, CY, CZ, DK, EE, ES, FI, FR, HR, HU, IE, IT, LT, LU, LV, MT, NL, NO, PT, SI, SK, UK	**24**
Information request from ISPs	AT, BE, BG, CY, CZ, DE, DK, EE, EL, ES, FI, FR, HR, HU, IE, IT, LT, LU, LV, MT, NL, NO, PL, PT, RO, SK, SI, UK	**28**
Analysis of complaints and end-user reporting	AT, BE, BG, CY, CZ, DE, DK, EE, ES, FI, FR, HR, IE, IT, LT, LU, LV, MT, NL, NO, PL, PT, RO, SI	**24**
Technical network monitoring	AT, CZ, FR, HU, IE, LT, LV, PT, SI	**9**

Table 2. Approach to monitor the commercial and technical conditions

4 NRAs responded that there are changes compared to the previous reporting period (CZ, NO, SE, UK).

Question 3. Pursuant to Article 3(1) have you completed any formal assessment of ISP restrictions on the use of technically compliant terminal equipment? Y/N

If yes, briefly describe the practice and the conclusions of the assessment (and enforcement action taken where applicable)?

The following NRAs stated that they have not completed any formal assessment of ISP restrictions on the use of technically compliant terminal equipment: AT, BE, DK, EE, EL, ES, IE, LT, LU, LV, MT, NL, PL, PT, RO, SE, SI (17). On the other hand, BG, CY, CZ, DE, FI, FR, HR, HU, IT, NO, SK, UK (12) conducted assessments, as shown below:

NRA	Assessment
BG	CRC has not identified practices, which are contrary to the provisions of the Regulation[5].
CY	Following a collection of ISPs' reports, OCECPR's main findings were that most of the ISPs offer their services accompanied with their own terminal equipment in order to be able to provide support and bundled services (telephony, internet, TV). Based on ISPs explanation, the provision of obligatory equipment by the ISPs is justified and according to the provisions of the Regulation and the Decree 72/2017 (adopting BEREC Guidelines BoR (16) 127)).
CZ	All inspections of ISPs were comprehensive and focused on the draft versions of the contract terms in all aspects from the point of view of the Regulation. Some providers linked the choice of the terminal equipment with the compliance under conditions that could restrict the right of the end-users to choose the terminal equipment. Following CTU's intervention, the defective provisions of the contract terms and conditions were removed.
DE	During the previous reporting period, BNetzA had started investigating Vodafone's zero-rating offer "Vodafone Pass", which was modified during the current reporting period. Thus, BNetzA did not currently see a need to continue its proceedings. In August 2018, Telekom launched the zero-rating of gaming applications as part of its StreamOn offer). BNetzA concluded that StreamOn Gaming does not contain material limitations of end-users' rights acc. to Article 3(1)/3(2) of the Regulation. The adaption of the general terms and conditions for partner CAPs is still outstanding, therefore the proceedings are not yet formally terminated. Furthermore, Telekom has to provide data (on a quarterly basis) on the number of StreamOn Gaming uses and their data usage. In February 2019 Vodafone launched a gaming pass in addition to its existing passes of the zero-rating offer "Vodafone Pass". BNetzA's investigations of this zero-rating offer are still ongoing. BNetzA also investigated flat rate tariffs of mobile ISPs with regard to certain restrictions. The assessment was not yet terminated in April 2019. Some end-user complaints concerned connectivity problems due to the provision of private –

[5] Regulation (EU) 2015/2120 of the European Parliament and of the Council of 25 November 2015 laying down measures concerning open internet access and retail charges for regulated intra-EU communications and amending Directive 2002/22/EC and Regulation (EU) No 531/2012.

	instead of public – IPv4-adresses and use of NAT. BNetzA's investigations showed that whereas large ISPs typically have a sufficient amount of public IPv4-addresses, this is not the case for smaller ones. BnetzA's approach is to oblige only those ISPs having a sufficient number of public IPv4-adressess to provide these upon request by the end-user. The other providers only would have to provide other technical solutions (to the extent this is reasonable). As could already be observed in the previous reporting period, complaints regarding the blocking of VoIP (either contractually or technically) are still few.
FI	FICORA took an administrative decision regarding a case, where an ISP only allowed users to use cable modems that it had accepted beforehand and restricted the use of all others. The ISP changed its conduct due to the assessment and decision.
FR	The assessment of the terms and conditions in the mobile market revealed several ISPs' limitations on terminal use. The examination of those cases has led to a shift in ISP practices and they modified their offers consequently. On the fixed market, some ISPs prevented end-users from using equipment other than the standard set-top box. ARCEP has reached no conclusion so far (Network Termination Point Guidelines are pending).
HR	HAKOM has not identified practices of restrictions on the use of technically compatible terminal equipment imposed by ISPs, which are not in line with the Regulation. In some cases, ISPs recommended the use of terminal equipment provided by them in order to be able to provide support and bundled services (telephony, internet, TV).
HU	Within the context of a questionnaire-based administrative supervision procedure, NMHH assessed ISPs' practices for the limitations imposed on the connectivity of subscriber's terminal equipment.
IT	AGCOM launched a public consultation in January 2018 concerning the right of end-users to use the terminal equipment of their choice and the prohibition of ISPs to enter into agreements with end-users or to adopt commercial practices that restrict that right. In August 2018, AGCOM published a decision stating that end-users have the right to freely choose their broadband router. According to AGCOM, ISPs cannot require end-users to rely exclusively on the router supplied by the ISP itself. This decision was appealed and the appeal proceeding is pending.
NO	Restrictions imposed by the ISP regarding the use of terminal equipment (ban on tethering + impermissible to insert SIM in personal router). ISP filed complaint to the Ministry, conclusion not yet available.
SK	According to the outcome of information requests of selected ISPs, none of the ISPs restricted the use of end-user own terminal equipment. In some cases, ISPs recommended the use of terminal equipment provided by ISPs due to incompatibility avoidance within their networks.
UK	Whilst carrying out an initial assessment of a zero-rating offer by a mobile operator, Ofcom became aware of (a) certain restrictions on the use of tethering for customers on some tariffs and (b) further restrictions aimed at preventing the use of handset SIMs in other types of equipment. After opening a formal investigation, Ofcom received written assurances from the operator concerned

	that it would bring these practices and restrictions to an end. After receiving these assurances, Ofcom closed its investigation.

Table 3. Assessments of ISP restrictions on the use of technically compliant terminal equipment

Question 4. What types of zero-rating services exist in your country?

i. None
ii. Music streaming services
iii. Video streaming/IPTV services
iv. Social media services
v. Voice and short messages
vi. Cloud services
vii. Email services
viii. Other_____

Is there any change compared to the previous period? If yes, please provide details.

There were no zero-rating services identified by one NRA only (FI), while one or more zero-rating services were reported by all other NRAs. Zero-rating of music streaming services, video streaming/IPTV services, social media services and voice and short messages were the most often identified examples.

Among the other zero-rating services, the most common of them were: maps and navigation services, audio books, e-book subscription service, radio channels, cloud storage services, the ISPs own apps and services, gaming, antiviruses, parental control (via device), QoS measurement tools, access to e-papers etc.

Type of zero-rating service	**NRAs**	**Number**
Music streaming services	AT, BE, BG, CY, CZ, DE, DK, EE, EL, ES, HR, HU, IE, IT, LU, LT, MT, NL, NO, PT, RO, SE, SI, SK, UK	**25**
Video streaming/IPTV services	AT, BE, CZ, DE, DK, EE, EL, ES, HR, HU, IE, IT, LU, LT, MT, PL, PT, RO, SE, SI, SK, UK	**22**
Social media services	AT, BE, CY, CZ, DE, DK, EL, ES, HR, HU, IE, IT, LT, LU, LV, PL, PT, RO, SI, SE, SK, UK	**22**
Voice and short messages	AT, BE, BG, CZ, DE, EL, ES, HU, IT, LT, LV, PL, PT, RO, SI, SE, SK, UK	**18**
Cloud services	AT, CZ, EL, IT, PL, PT, RO	**7**
E-mail services	IT, PL, PT, RO	**4**
Other	AT, DE, DK, FR, HU, IT, LT, LV, PL, PT, RO, SE, SK	**13**

Table 4. Type of zero-rating services

15 NRAs responded that there are changes compared to the previous reporting period (AT, BE, BG, CZ, DE, DK, ES, FR, HR, LU, LT, MT, PT, SI, SK).

Question 5. Pursuant to Article 3(2) have you performed any formal assessments of agreements on commercial and technical conditions as well as commercial practices such as zero-rating or traffic price discrimination practices? Y/N

If yes, briefly describe the practice and the conclusions of the assessment (and enforcement action taken where applicable).

NRAs from 17 countries (AT, BE, CY, CZ, DE, ES, FR, HR, IT, LU, MT, NL, NO, PT, RO, SE, SI) said they had undertaken one or more assessments of zero-rating practices, while 12 NRAs (BG, DK, EE, FI, EL, HU, IE, LT, LV, PL, SK, UK) responded that no formal assessment was performed.

The following case descriptions serve as examples involving these practices as they were analysed and reported by NRAs.

AT**:** ISPs are on a non-regular basis asked to provide data on their zero-rating products (monthly data). In Austria four ISPs are providing zero-rating tariffs. 18 tariffs have zero-rating included and nine tariffs are offered as options. Approximately 5-15% of all subscribers with mobile data or smartphone tariffs either have tariff plans, which include zero-rating, or make use of additional plans, which feature zero-rating. The higher estimate covers all subscribers to tariffs with some form of zero-rating. The lower number refers to the number of active subscribers with zero-rated plans. Conclusion: At the moment end-user rights are not limited due to zero-rating. At the wholesale level no complaints were received. RTR did not hear from any CAPs that were not able to join. Regarding consumer end-users, RTR did not receive any complaints. The number of subscribers is still relatively low and only one ISP offers tariffs that include zero-rating.

BE**:** BIPT assessed multiple zero-rating offers, but none of these culminated in a formal publication on the website of the BIPT. Two zero-rating offers needed to be adapted after an assessment (one temporary action of Proximus during the World Cup Football and one permanent offer: the Zero-rating of Proximus in the Epic tariff plans). Since Proximus complied in both instances, no formal publication was done on the website of the BIPT.

CY**:** According to the provisions of the Regulation (as interpreted in BEREC Guidelines) ISPs reported to OCECPR on their agreements regarding commercial and technical conditions and commercial practices. There were potentially two zero-rating practices offered by a single provider. OCECPR proceeded with a further investigation and it was concluded that the zero-rated applications are used by a minimal percentage of subscribers (0,01% and 0,1% respectively of the total number of single provider's subscribers). Based on this fact, OCECPR considered that there is no immediate impact on user rights and decided to currently limit itself to monitoring the situation. One zero-rating practice was terminated in April 2019 and the other was expected to be terminated in June 2019.

CZ**:** Under its supervisory activities, CTU continued monitoring some selected commercial practices used by the ISPs, in particular zero-rating practices and data traffic management measures. Within its supervisory activities, CTU sees to it, on a long-term basis, that the services offered with zero-rating comply with the criteria laid down in the BEREC Guidelines,

in particular it ensures that the end-users, depending on their plan, have always access to the entire content of the Internet and that services are not inadmissibly limited to those which are included in the zero-rated offer. CTU also ensures that the system of zero-rated offers is maximally open to application developers and content providers and is not restricted, conditioned or charged for by the ISPs, except for the necessary technical cooperation.

DE**:** Following the decision in the case "StreamOn" in December 2017, the court proceedings (both proceedings for interim relief, as well as main proceedings) are still pending. In the StreamOn case, BNetzA submitted responses both to the Administrative Court as well as the Higher Administrative Court in the interim proceedings. Furthermore, BNetzA also submitted a written statement as amicus curiae in civil court proceeding concerning the zero-rating offer "Vodafone Pass" (initiated by a German consumer association). Moreover, BNetzA investigated the case and heard the ISP and market participants when new zero-rating tariffs were launched (in particular "StreamOn Gaming").

ES**:** Zero-rating offers in which the number of apps included (e.g. social media; video streaming) was too small. ISPs voluntarily agreed to modify their offers. Zero-rating offers not offered in roaming were modified by operators. A question was raised by ISPs that wanted to throttle traffic in congestion situations. The criteria to throttle the traffic would have been to select those users with the less expensive data packets. Of course, the question was answered negatively and therefore, the ISPs never implemented it.

FR**:** An assessment of the zero-rating offers of one provider is in process and a decision from ARCEP's Board is pending.

HR**:** HAKOM investigated A1’s zero-rated “VIP NOW” streaming offer and tariff option “StreamOn” of Hrvatski Telekom. The bandwidth for video streams was throttled representing unequal treatment of data traffic and as such was assessed under Article 3(3) of the Regulation. Hrvatski Telekom and A1 changed their zero-rated services in September 2018 upon HAKOM’s request, so the offers are now in line with the Regulation.

IT: AGCOM had an ongoing analysis on commercial and technical conditions as well as commercial practices in the Italian market.

LU**:** There is compliance of the offers with the Regulation. The offers are monitored with a regular data collection on a monthly basis.

MT**:** MCA assessed three zero-rated products and published its conclusions in the form of an MCA decision. In its assessment, MCA concluded that given the market conditions, there are no risks to the market. However, MCA also requested ongoing market monitoring to keep the offers under control.

NL**:** As described in previous implementation questionnaires, ACM has looked at a zero-rating offer by T-Mobile, which offers unlimited music streaming (open to all music-streaming platforms). This service was found not to be breaching the Regulation. In January 2019, the court upheld ACM's decision to allow the zero-rating offer, making it definitive.

NO**:** Assessments were made in connection with the work on the annual NN national report, resulting in high-level conclusions and no concrete enforcement actions.

PT**:** In July 2018, ANACOM approved a final decision on zero-rating and similar commercial practices in Portugal, where it presented some recommendations, regarding the data allowances available on zero-rating and similar offers and the conditions that must be verified to include other applications and content providers in zero-rating and similar offers. Currently, ANACOM is analysing the impact of zero-rating and similar commercial practices in Portugal, in terms of end-users' rights.

RO**:** In the context of zero-rating practices assessments, one investigation revealed an important traffic management breach, which was treated accordingly. ANCOM issued a decision ordering the ISP to stop unlawful traffic management. The Decision was challenged in court and the trial is currently pending. ANCOM keeps monitoring the evolution of zero-rating practices, but up until now, there are not enough reasons to intervene in other zero-rating cases.

SE**:** Telia launched a mobile offer in April 2016, "Free surf on social media". The zero-rating offer on social media allows subscribers to use a number of social media applications and services (Facebook, Instagram, Messenger, WhatsApp, Twitter and Kik) without deduction of data. The subscriber has unlimited use of the selected social media services without the data usage affecting the volume of data included in the subscription. Applications such as Pinterest, Viber, LINE and Welcome App were later included in the offer. In May 2017, PTS initiated supervision regarding the commercial practice of zero-rating under Article 3(2) of the Regulation. PTS dismissed the case in June 2019, after having found that the offer was open to all suppliers of content and that the offer did not limit the end-users rights under the Regulation.

SI**:** AKOS found the offers in line with the Regulation.

3 Article 3(3)

Question 6. If you started any monitoring of traffic management practices by ISPs, what approach have you taken?

i. market survey without requesting information from ISPs
ii. information request from ISPs
iii. analysis of complaints and end-user reporting
iv. technical monitoring
v. other, please specify.

Is there any change compared to the previous period? If yes, please provide details.

NRAs often used more than one of these techniques to monitor traffic management practices. 11 NRAs undertook a market survey without requesting information from ISPs. 25 NRAs reported that they had submitted information requests to ISPs, while 20 had analysed complaints and end-user reports. Technical monitoring is up and running in 11 countries.

Other solutions included, the publication of a study on 5G, providing an “alert platform” for end-users and a traffic management application to help detect any possible traffic management measure.

Approach	Countries	Number
Market survey without requesting information from ISPs	AT, CY, CZ, EE, FR, HU, IT, LT, MT, NL, SI	**11**
Information request from ISPs	AT, BG, CY, CZ, DK, EL, ES, FI, FR, HR, HU, IE, IT, LT, LU, LV, MT, NL, NO, PL, PT, SE, SI, SK, UK	**25**
Analysis of complaints and end-user reporting	AT, BG, CY, CZ, DE, DK, EE, ES, FI, FR, IE, IT, LT, LU, LV, MT, NL, PL, RO, SI	**20**
Technical network monitoring	AT, CZ, FR, HR, HU, IE, LV, LU, MT, PT, SI	**11**
Other	NL, FR	**2**

Table 5. Approaches of NRAs regarding monitoring of traffic management practices by ISPs

CZ, NL, SE (3 NRAs) stated that there is a change compared to the previous reporting period.

Question 7. Pursuant to Article 3(3) subs 1 to 3, have you completed any formal assessments of an ISP’s traffic management practices? Y/N

If yes, briefly describe the practice and main conclusions of the assessment (and enforcement action taken where applicable).

18 NRAs (AT, BG, CY, CZ, EL, ES, FR, HR, HU, LT, MT, NL, PL, PT, RO, SE, SK, UK) pointed out that they had completed formal assessments of traffic management practices.

AT**:** Between February and November 2018, eight formal procedures were initiated because of blocking of websites due to copyright claims. RTR also initiated a declaratory proceeding based on request by an ISP between April and November 2018. The ISP has not blocked access to these specific websites that might structurally breach copyright law, but received a request to block these websites by the copyright holder. Between January and April 2019, six formal procedures were initiated because of blocking of websites due to copyright claims based on Article 3(3) of the Regulation. Further, six formal procedures were initiated in February 2019, again because of blocking of websites due to copyright claims. Another formal procedure was initiated in April 2019.

BG**:** The assessment of the traffic management practices is based on the information delivered from ISPs for the Annual Questionnaires, as well as a case referred to the NRA by the Gambling Commission. One ISP was found to apply a traffic management measure, which was not in compliance with the Regulation. When it blocked the access to web pages in order to comply with court decisions, it used a method of IP blocking which resulted in blocking all pages hosted on the same IP address. The ISP changed the blocking method immediately and voluntarily in order to comply with the Regulation. Enforcement actions were not taken.

CZ**:** First, CTU formally investigated a suspicion related to application of traffic management measures (or, more precisely, limitation of service quality) within roaming in the Czech Republic, in particular limitation of the speed of the transmitted data with mobile Internet access. Another investigation was conducted to check whether there is optimization of quality parameters when providing zero-rated services, due to network protection. A further inspection was performed to examine whether the mobile virtual operator providing a benefit in a form of increased data volume - which can only be used for pre-defined applications - blocks the Internet access service after the agreed-upon data volume has been used up, or still provides Internet access for such selected applications. Nevertheless, none of the investigations conducted revealed a breach of the Regulation.

CY**:** According to the provisions of the Regulation (as interpreted in BEREC Guidelines), ISPs reported to OCECPR on traffic management practices. OCECPR's main findings were that a fixed ISP uses a traffic management practice in the form of a fair use policy on monthly basis. Specifically, when a data cap (relatively small volumes both for download/upload stream) is reached within a month, the ISP may limit the access rate of the user for the rest of the monthly period. OCECPR is currently assessing the practice and has the intention to inform the ISP concerned that this practice may constitute an infringement, and request further action in order to ensure compliance with the provisions of Regulation and Decree 72/2017.

EL**:** EETT identified that a mobile ISP used to throttle video streaming in its network. EETT informed them that this is not allowed by the Regulation and following that, they stopped this practice.

ES**:** Traffic management practices (e.g. in case of congestion) described in contracts are too generic. They should be more specific.

FR**:** Last year, ARCEP assessed the traffic management practices of one ISP after receiving end-users' reports on a deterioration of QoS for some specific online services. The investigation concluded that the problem was at an interconnection level and was not due to a discriminative traffic management policy. The concerned ISP and online services negotiated and solved the QoS problem. ARCEP is assessing possible traffic management practices in in-flight internet offers. No conclusion has been reached and ARCEP is still monitoring the case.

HR**:** In the previous period, HAKOM started a traffic management survey requesting information from ISPs about existing traffic management practices. The analysis was finished in October 2018 and showed that traffic management measures are only applied by the ISPs as a preservation of integrity and security and as a congestion management measure. Formal assessment regarding possible violations of Article 3(3) of the Regulation which were conducted in the previous period (technical discrimination of traffic in the context of zero-rated video service) were closed in 2018, as the ISPs ensured compliance with the Regulation.

HU**:** Within the context of a questionnaire-based administrative supervision procedure, last year the NRA assessed ISPs' traffic management practices. The NRA has carried out the examination of traffic management. Although the ISPs reported that they use prioritization in case of traffic congestion, this practice is not contrary to the provisions of the Regulation.

Whether the ISPs comply with the principle of the temporariness and proportionality set out in the Regulation during their prioritization practice requires further monitoring by the NRA.

LT**:** During quarterly investigations on traffic management of zero-rated offers, it was determined that after the data cap was reached, all data traffic was limited, except for the zero-rated app. The ISP was contacted and tried to correct the breach of the Regulation. The ISP did not find a viable software solution for billing the zero-rated offer correctly, so the ISP decided to discontinue the offer.

MT**:** The main conclusion is that all providers are compliant with the provisions of the regulation.

NL**:** ACM investigated ISPs' traffic management practices by conducting interviews and sending requests for information. Both the applied practices and implemented processes to ensure compliance were covered. These interactions led to ISPs updating their terms and conditions.

PL**:** In case of network congestion, one ISP prioritized the ISP traffic generated by end-users for business IAS over the remaining Internet traffic. The practice was applied by a provider of fixed-line internet service. The ISP was informed about the breach of the Regulation and obliged to submit information to UKE about measures to address the problem. The ISP informed UKE that it stopped the practice as described above.

PT**:** ANACOM has detected some incompatibilities with net neutrality rules for some zero-rating and similar commercial practices, as the traffic is not always treated equally when providing internet access service. This situation happens with some zero-rating offers, where in specific situations, all the applications are blocked (or slowed down) once the data cap is reached, except for the zero-rating applications. It was also identified that the terms of use of some zero-rating and other similar offers are restricted to the national territory, in contradiction with the Roaming Regulation. In July 2018, ANACOM approved a final decision on zero-rating and similar commercial practices in Portugal. ANACOM decided that the ISPs amend the zero-rating and similar offers in accordance to the net neutrality and roaming rules. ANACOM's monitoring tool NET.mede, available since 2013, continues to provide users a traffic shaping test, regarding two applications: BitTorrent (peer-to-peer) and Flash Video (streaming). This test, based on Glasnost, requires the installation of an application for Windows, macOS and Linux.

RO**:** In the context of a zero-rating offer, one ISP discriminated traffic (by throttling video-streaming at 1.5Mbps and still allowing other traffic at normal speed up to 150Mbps) on its mobile network once an 'unlimited internet' bonus was activated by a subscriber.

SE**:** PTS initiated a supervision in January 2019 regarding a traffic management policy published on Telia's website. The policy seemed to entail a slowing down of file sharing and a limitation of simultaneous sessions to a maximum of five. Telia responded that such traffic management was not practiced, which led to PTS dismissing the case. Bahnhof: In December 2018, PTS initiated a supervision against the ISP Bahnhof regarding blocking of websites through DNS. The ISP has blocked the websites due to a pending court case, however the blockings have been implemented prior to any court ruling. PTS is assessing whether the blockings are implemented in violation of the regulation.

SK**:** According to the outcome of information request to selected ISPs, none of the ISPs used traffic management practices such as: differentiation of traffic management based on different access types, modification of content or traffic, blocking or throttling of specific user categories, specific content or application types, specific content providers, web sites, or some port or protocol.

UK**:** From responses to information requests, Ofcom became aware of a number of traffic management and other practices, which had the potential to breach the Regulation as well as the EU roaming rules. These practices included: (1) 'throttling' or slowing down video or other categories of traffic (such as P2P and VPN traffic); (2) applying compression techniques to certain web content and images; (3) prioritising video and social media traffic over other types of traffic during periods of temporary network congestion; (4) restricting tethering and restricting the devices in which mobile handset SIMs could be used; and (5) throttling some categories of traffic when customers were roaming. Ofcom opened formal investigations into the practices of three mobile operators and engaged with those operators to clarify their obligations under the Regulation. The three operators agreed to change their practices to come into compliance with the Regulation and gave Ofcom written assurances to that effect. Ofcom was satisfied that no further action was required and closed its investigations on receipt of the operators' assurances.

Question 8. Did you conduct any research or survey on port blocking practices by ISPs? Y/N

If yes, please briefly describe significant findings.

13 NRAs (AT, BG, CZ, HR, HU, IE, LT, LV, MT, NL, PL, SI, SK) surveyed port blocking practices by ISPs.

AT: RTR offers since 2012 the RTR-NetTest (https://www.netztest.at), a crowd-sourced open data and open source measurement tool, which allows measuring different QoS-parameters, including blocking of UDP and TCP ports.

BG: The assessment of the traffic management practices is based on the information delivered by ISPs through the Annual Questionnaires. The conclusion is that ISPs apply traffic management practices according to the Regulation and the respective BEREC Guidelines.

CZ: CTU verified whether some selected ports in mobile networks are blocked. The measurements did not reveal that blocking is applied by the ISPs.

HR: In 2017 HAKOM implemented HAKOMetar Plus (mobile crowd sourcing application) which provides some network services tests (TCP-ports and UDP-ports test for detection of blocking of specific ports, etc.). Measurement results are used by HAKOM for internal research on port blocking practices by ISPs, which shows that ISPs do not use permanent port-blocking measure, just temporarily justifying it with the security exception.

HU: Within the context of a questionnaire-based administrative supervision procedure, last year the NRA assessed ISPs' port blocking practices. The main findings are as follows: (1) landline ISPs disable or block certain ports for the purpose of preventing spam (e.g. ports

SMTP 25, 587 and SMPS 465); (2) mobile operators disable certain TCP and UDP ports (e.g. ports 53 or 135–149) in connection with the restriction of traffic generated by viruses (affecting only a tiny fraction of subscribers); (3) based on the responses of the operators, these measures were primarily taken in the interest of network integrity and service security. The NRA does not believe that any further broad investigation is needed at this time, but further monitoring of the applied practices is recommended.

LV: SPRK concluded that some ISPs block specific ports in order to avoid security threats and the spread of malware.

LT: Some ISPs use port-blocking for security reasons. The list of ports that were found to be blocked: TCP 21 (FTP) out; TCP 25 (SMTP) out; TCP 554 (RTSP) out; UDP 123 (NTP) out.

MT: ISPs submitted information about applicable port blocking as part of their response to the TCPI questionnaire. It should be noted that while some ports are blocked by ISPs, such blocking is justified for network security measures.

NL: ACM monitors port-blocking practices of major ISPs and keeps an overview of its findings. ACM follows up on these findings or on other signals about port-blocking if it believes that the practice is not compliant with the Regulation.

PL: A survey conducted indicates that ISPs block TCP/UDP ports. Ports: 67, 123, 22(tcp), 23 (tcp), 80 (tcp), 443(tcp), 8080 (tcp), 9494(tcp), 35300 (tcp), 135, 139, 445 are blocked for incoming Internet traffic. Other ports, considered risky, are also blocked. The list of them is updated based on expert portals, as well as ports used for the management of the network and voice-handling equipment. One ISP reported that it blocks UDP ports. Two ISPs reported that they block all ports for incoming Internet traffic. One of those ISPs clarified that the exception to the rule are ports open to services with appropriate certificates in line with the TR069 standard (i.e. enabling safe communication between a terminal and an internet provider). For the port 25 (tcp), outgoing Internet traffic is blocked. The above ports are blocked in order to ensure integrity and security of the network and services provided through the network and end-users' terminal devices. The application of the NAT mechanism also leads to limitations in the availability of open ports for incoming Internet traffic.

SI: Some ISPs still block port 25 (from user to the internet, providers justify the blocking by preventing spam and users can always use port 465 or 587 for e-mail.) Some ISPs also block port 53 (justification: perceived abuses - DDOS attack prevention). Some ISPs block ports of 135-139 and 445 (TCP / UDP or NetBIOS protocols) used on local network and opens them on user´s request. One of the ISPs additionally blocks TCP / UDP ports 19 and 593. AKOS estimates that this is a case of rarely used protocols, which need to be activated manually, so there is no need to limit or block them. The most commonly blocked port on the mobile network is port 5060 (TCP and UDP).

SK: A survey was conducted among the 11 biggest ISPs, which included also port blocking. Responses did not show any practices breaching the Regulation. ISPs mostly used blocking of ports, due to integrity and security of their networks (DoS, DDoS, etc.).

4 Article 3(5)

Question 9. What approach have you taken to monitoring services other than internet access services (called specialised services below)?

i. market survey without requesting information from ISPs (e.g. checking ISP's offers on their web pages)
ii. information request from ISPs
iii. analysis of complaints and end-user reporting
iv. technical network monitoring
v. other, please specify:

Is there any change compared to the previous period? Y/N

If yes, please provide details.

As shown in the table below, around two thirds of the NRAs (19) kept on using the second method of monitoring specialised services (SpS), namely through formal 'information request from ISPs', which proves to be the most prevalent method. As a second choice, more than half of the NRAs chose the 'analysis of complaints and end-user reporting', while the 'market survey without requesting information from ISPs' dropped in the third place from second in the previous reporting period. Remarkably, the NRAs that used 'technical network monitoring' are only 3 compared to 7 in the previous period.

Approach	NRAs	Number
Market survey without requesting information from ISPs (e.g. checking ISP's offers on their web pages)	BE, CY, CZ, EE, FR, HR, HU, IT, LT, MT, PT, SI	**12**
Information request from ISPs	AT, BG, CY, CZ, DK, EE, EL, ES, FI, FR, HR, HU, IE, IT, LV, MT, NO, PL, SK	**19**
Analysis of complaints and end-user reporting	AT, BE, BG, CY, CZ, DE, ES, FI, FR, HR, IE, LV, MT, PT, RO, SI	**16**
Technical network monitoring	AT, CZ, HU	**3**

Table 6. Approaches of NRAs regarding monitoring of services other than internet access services

Question 10. Is there an NRA or national interpretation of or guidance on "services other than internet access services", which has not yet been mentioned in the BEREC NN Questionnaire of 2018? Y/N

If yes, please provide any information and examples other than the ones mentioned in BEREC Guidelines (VoLTE, IPTV).

There is only 1 NRA (EL) which introduced National measures[6] that oblige ISPs to provide contractual information about the quality requirements of the SpS and the potential impact to the subscriber's IAS. They also stipulate that ISPs should ensure the network has sufficient capacity, so that the provision of SpS to a subscriber does not impair the quality of other subscribers in the network.

A quality impairment exists when there is continuous or repeated performance decrease with respect to a previous level of performance, or when it can be proven that this reduction is statistically significant ($\alpha \leq 0.05$).

Question 11. Have you completed any formal assessments of the provision of specialised services by ISP? Y/N

If yes, briefly describe the practice and the conclusions of the assessment (and enforcement action where applicable)

In total, 3 NRAs completed formal assessments of the provision of specialised services by ISPs.

CY: ISP report to OCECPR about specialised services

According to the provisions of the Regulation (as interpreted in the Net Neutrality Guidelines), as adopted in national secondary legislation (Decree 72/2017), ISPs in Cyprus reported to OCECPR on specialised services. Following assessment of ISPs reports, OCECPR found out that provision of the type of specialised services offered by ISPs does not constitute an infringement of the Regulation.

HU: NMHH monitoring IPTV T&Cs

As in last year, NMHH continuously monitored ISPs' conditions for the provision of IPTV and examined the related contractual terms.

SK: Information request to select ISPs

According to outcome of information request of selected ISPs, audio-visual services (i.e. IPTV, VoD, SVoD etc.) were provided by 55% of ISPs, Telephone services were provided by 64% of ISPs, VPN services were provided by 64% of ISPs, and other specialised services were provided by 9% of ISPs.

[6] EETT has issued a binding decision (EETT Decision 876/7B/17-12-2018) on net neutrality, pursuant to Articles 4(3) and 5(1) of the Regulation. This decision sets out additional transparency requirements for ISPs and provides clarifications for the application of traffic management and commercial practices. It also entails a methodological framework for estimating speeds as well as the conditions under which subscribers can claim compensation in the case of discrepancies between the actual performance of the IAS and the performance indicated in the contract.

5 Article 4

5.1 Article 4(1) – Approach to monitoring and enforcing compliance

Question 12. What approach have you taken to monitoring and enforcing ISPs' compliance with their transparency obligations set out in Article 4?

i. market survey without requesting information from ISPs (e.g. checking the applicable "terms and conditions"),
ii. (formal or informal) information request from ISPs,
iii. analysis of complaints and end-user reporting,
iv. other

Is there any change compared to the previous period? If yes, please provide details.

As shown in the table below, it looks like the three approaches have more or less equal preference by about two thirds of the NRAs.

Approach	NRAs	Number
Market survey without requesting information from ISPs (e.g. checking ISP's offers on their web pages)	BE, BG, CY, CZ, DE, EE, ES, FI, FR, HR, HU, IT, LV, MT, NL, NO, PT, SI	**18**
Information request from ISPs	BG, CY, CZ, DE, DK, EE, EL, ES, FI, HU, IE, IT, LU, LV, MT, NL, NO, PL, PT, RO, SK, SI	**22**
Analysis of complaints and end-user reporting	AT, BG, CY, CZ, DE, EE, EL, ES, FI, IE, IT, HR, LV, LU, MT, NL, PL, PT, RO, SI	**20**
Other	AT, DE, FR, IT, LT, PT	**6**

Table 7. Approaches of NRAs regarding monitoring and enforcing ISPs' compliance with their transparency obligations set out in Article 4

Furthermore, the following approaches were applied by NRAs:

AT: ISPs are obliged under the Austrian Telecommunications Act 2003 (TKG 2003) to notify their T&Cs to RTR before they start a new communication service or change existing services.

FR: The body responsible for protection of end-user rights and compliance with consumer law (DGCCRF) has undertaken a market survey in order to review the transparency engagements of ISPs' contracts. The conclusion of this survey was that French ISPs do not fulfil the requirements of Article 4 of the Regulation for the time being. DGCCRF will work together with ARCEP to lay out more precise requirements.

IT: AGCOM published statistical comparative values of ISPs' QoS results reached and started a surveillance activity on service charters and general conditions contents.

Other NRAs (DE, LT, PT) kept analysing the contractual terms of the ISPs (e.g. by monitoring their websites), while LT also held bilateral meetings and discussions with ISPs and PT asked ISPs to provide clear and more comprehensible information on IAS speeds.

More than two out of three NRAs (22) explicitly pointed out that there is no change compared to the previous period (AT, BE, BG, CY, DE, DK, EE, EL, FR, HR, HU, IE, IT, LT, LU, LV, MT, NO, PL, SE, SK, UK).

Question 13. Have you completed any formal assessments of the ISPs' contract conditions and their compliance with requirements set out in Article 4(1) sub a-e? If yes, please describe the main findings. [Note: detail of compliance in relation to speeds information requested below under Q16, 17]

A formal assessment of the ISPs' contract conditions and their compliance with Article 4(1) sub a-e was completed by 12 NRAs (AT, CY, CZ, ES, FI, HR, HU, MT, NO, RO, SI, SK). No infringements with regard to Article 4(1) sub a-e were found in CY and MT.

It should be noted that the question asked whether formal assessments were completed. Not having done so should not be confused with monitoring and enforcing ISPs' compliance with their transparency obligations, see Q12 above.

AT referred to ISPs' problems, specifying realistically achievable speeds for mobile in their T&Cs, while FI noticed that many ISPs used the term "unlimited" in their contracts, but they did not really mean it. ES pointed out that they sent formal requirements to some ISPs, so that all type of internet speeds are included in contracts. SI said that all major ISPs' contracts (covering 90% of the market) are in compliance with the regulation, while in SK ISPs' contracts are to a great extend compliant with contract conditions set out in Article 4(1) (resp. 82%/82%/71%/80%/73% for Articles 4(1) sub a-e). In HU, NO and PT (though the assessment is not formally complete), ISPs have not yet fully complied with the Regulation, as their contracts are still incomplete and lack the required speed parameters.

CZ carried out 175 examinations of the published draft agreements on the provision of IAS with 144 ISPs, with the most common defect being the incomprehensible or unclear definition of the quality of service parameters, in terms of definition of the speed according to Article 4(1)(d) of the Regulation (connection speed, actual speed, etc.).

Lastly, some NRAs (HR, NL, PL) have completed the assessment of ISPs' contract conditions in previous periods, so they either check the new contracts only (HR) or they focus on specific cases based on end-user reporting (NL).

Question 14. Have national specifications been set in relation to the different types of speeds laid out in Article 4(1) sub d?

Were requirements:

- imposed by NRA or other competent Authority?
- agreed upon by market players?

Question 15. Are these requirements or the NRA's opinion/recommendation legally binding?

Specifications set

National specifications in relation to different types of speeds have been set by 17 NRAs (AT, BE, BG, HR, CY, CZ, DK, EL, FI, IT, LV, MT, NL, RO, SK, SI, UK). Out of these 17, table 8 further below displays the 9 countries that used percentage values by defining minimum and normally available speeds as a percentage of the maximum speeds (BG, CY, EL, FI, HR, IT, LV, SK, SI).

Legally binding or informal

In 9 countries these requirements or NRAs' opinion/recommendation are legally binding (BE, CY, EL, HR, HU, IT, LV, MT, RO). In most cases where speeds are specified by the use of percentages, the specification is binding (CY, EL, HR, IT (max and min speed), LT, MT) – but not in FI, SK, SI (not binding yet, will be in autumn 2019). In a total of 18 countries, specifications or requirements are not legally binding (AT, BG, CZ, DK, EE, ES, FI, FR, LT, LU, NL, NO, PL, PT, SE, SK, SI, UK).

Imposed by:

Such specifications, in relation to the different types of speeds, were imposed by 11 NRAs (BE, CY, EL, FI, HR, LV, MT, NL, RO, SK, SI). In 2 cases they were agreed upon by market players (DK, UK), but there are also cases where the agreement by market players comes along with legally binding specifications (HU, IT).

More specific findings

The answers provided to Q14 and Q15 show that there is a variety of institutional settings on how specifications are set. In almost all cases, this involved activities by the NRA, taking the form of recommendations, secondary legislation or decisions etc.

Country	**Specification of speeds by the use of percentages**	**Achievability of speeds**
BG	the normally available speeds should be 80% of maximum speed	Normally available speed should be available 80% of time over 24 hours
CY	ISPs are obligated to specify in their contracts: • as far as fixed network is concerned, minimum, standard and maximum speed, in percentage of advertised speed. • as far as mobile network is concerned, where applicable, the	ISPs are required to set the time periods within the day in which maximum speed is achieved, the periods expected to reach normally available speed, and the periods when speed may be limited to the minimum.

	advertised speed, in percentage to the estimated maximum speed.	
EL	ISPs can perform individual measurements at subscriber connection or aggregate measurements over a geographical area (e.g. municipality, or area defined by local exchange). The measurement sample should not be older than 1 year and estimates should be defined by confidence intervals with confidence level ≥ 95%. Based on the measurement sample, the minimum, maximum and normally available speeds are defined as follows: - Minimum speed 5% of measurements during peak hours - Maximum speed 95% of measurements during non-peak hours - Normally available speed 50% of measurements during peak hours	Peak hours from 7 p.m. – 11 p.m. for residential users, and from 9 a.m. – 5 p.m. for non-residential (business) users. ISPs are free to provide different intervals for peak hours, based on the actual usage of their networks.
FI	Requirements set for subscriptions with the maximum speed ≤ 100 Mbit/s: • minimum speed must be at least 70% of maximum speed • normally available must be at least 90% of maximum speed	Normally available speed should be achieved 90% of the time during each four-hour period.
HR	Min speed ≥ 70% of max speed Normally available speed: not specified because of the high threshold for minimum speed	
IT	Min. speed/ max. speed: 95- and 5-quantile (respectively) of the speeds measured in a time interval (6 months for statistical comparative values / 24 hours for single users' lines) Measures are sampled every 15 minutes. Also average and standard deviations are calculated and published.	Max. speed is defined based on actual measurements, therefore it is achievable.
LV	Min speed: ≥ 20% of max. speed	
SI	minimum speed must be at least 50% of the maximum and at least 25% of the maximum inlet and outflow speed using FWBA access. Normally available speed must be at least 80% of the maximum incoming	Normally available speed: at least 90% of the time of the day outside peak hours Max. speed: achievable at least once per day

	and outgoing connection speed. In the case of FWBA access, the normally available speed must be at least 50% of the maximum speed.	Min. speed lowest actual data transfer speed from the server or to the server (except for network failures)
SK	Min. speed: ≥ 40% of max speed Normally available speed: ≥ 90% of max. speed Advertised speed: recommended to be applied so that it allows to evaluate advertised speed against real performance of internet access service	Normally available speed: 90% of any continuous 4-hour measurement period Max. speed: at least once between 00:00 to 24:00

Table 8. Specification of speeds by the use of percentages and achievability of speeds

Question 16. To the extent, your NRA has reviewed the terms and conditions in ISP contracts, did ISPs define in their contracts minimum, maximum, advertised and normally available upload and download speeds of the internet access service in the fixed network?[7]

Definitions provided (completely/widely)

Fixed network ISPs contractually defined these speeds in 22 countries (AT, BE, BG, CY, CZ, DE, EE, ES, FI, HR, IT, LT, LV, MT, NL, NO, PL, PT, RO, SI, SK, UK).

More detailed information

BG: The ISPs include values for minimum, maximum, advertised and normally available upload and download speeds in their contracts. However, definitions of those speeds are generally not included.

CZ: Deficiencies were spotted mainly in the minimum and generally available speeds, where in most cases those parameters were not defined clearly and comprehensibly, and in some cases these parameters were not distinguished for download and upload. Due to the repeated meetings with the ISPs and as a result of the NRA's monitoring activities and the administrative decisions issued, the situation is gradually improving.

DE**:** Providers typically mention in their terms and conditions concrete figures for the respective speeds or mention a percentage of the maximum speed. The advertised speed typically equals the maximum speed.

HR: The NRA mentioned a partial compliance, since all ISPs have not defined the normally available speeds (upload/download) yet. Also in LV, ISPs do indicate minimum and maximum connection speed values in their contracts, but they do not always include the normally available.

[7] Note: remarks provided in this section only relate to countries where the NRA has reviewed the terms and conditions in contracts of fixed network ISPs.

IT: Minimum speeds only are specified, so the NRA is considering whether to modify their regulation in order to introduce other parameters as well.

NO: The ISPs defined the required speed parameters only to a limited extent.

PT: The analysis performed revealed that in most cases information about minimum, normally available, maximum and advertised download and upload speeds is provided by reference to the ISPs websites. Although such speeds are, in some cases, indicative, there is no clear and comprehensible explanation for them.

RO: The providers of internet access services include in the contracts the numerical values of the minimum, maximum, normally available and advertised speeds in the case of fixed networks, but the procedure the consumer has to follow in order to measure these speeds and obtain remedies, if necessary, was missing from the contracts in most of the cases.

Lacking provision of definitions

6 countries (DK, FR, HU, IE, LU, SE) pointed out that these speeds are not contractually defined.

EL: The ISPs have not yet defined minimum, maximum, advertised and normally available upload and download speeds of the IAS in their fixed network contracts. They have an official obligation to do that by 5 October 2019, as dictated by the National Regulation.

FR: The NRA pointed out that ISPs only define the theoretical maximum speeds for their fixed access offers.

Although landline ISPs in HU do include data in the contracts with respect to the target values of their services, they are not harmonized with the requirements in Article 4 (1) (d) of Regulation. Consequently, each operator lists its own terms and conditions for the speed target values as stipulated in the currently effective national legislation dealing with QoS. Following the publication of the new national regulation (expected by the end of 2019), the Authority will increase its enforcement activities in this area.

Other aspects

ES: There is a difference between FTTH and DSL access. In FTTH, minimum and maximum speeds are almost the same, while in DSL access, normally available speeds are around 50-60% of the advertised one.

LT: Several ISPs provide information that minimum, maximum, advertised and normally available upload and download speeds are the same or almost the same (only few per cent difference between these parameters). They also state that minimum upload and download speed is approximately 75 per cent of maximum speed. Almost every ISP also states that maximum and advertised speeds are equal.

UK: Advertising Standards Authority (a competent authority other than the NRA) has made major changes to the way broadband speed claims can be advertised, now they should be based on the download speed available to at least 50% of customers at peak time and

described in ads as “average”. This marks a change from the current position that advertised “up to” speeds should be available to at least 10% of customers.

Question 17. To the extent your NRA has reviewed contracts of mobile ISPs, did they define in their contracts advertised and estimated maximum upload and download speeds of the IAS in the mobile network?[8]

Please briefly explain the main findings.

If available, please provide information regarding contractual conditions, such as under which the estimated maximum speed can be achieved (NN guidelines examples of “realistic usage conditions”153).

Definitions provided (completely/widely)

Generally, the situation is quite similar for mobile IAS. In 19 countries – where NRAs have reviewed the mobile ISPs’ contracts – these speeds are defined in contracts (AT, BG, CZ, DE, EE, ES, FI, HR, IT, LT, LV, MT, NL, NO, PL, PT, RO, SK, SI).

More detailed information

BG: In their contracts, mobile ISPs declare the advertised speed and maximum speed as equal. The maximum download and upload speeds in contracts are defined for each generation of the mobile network – 2G/3G/4G.

CZ: Deficiencies were ascertained; specified speeds were not expressed by a value separately for download and for upload. In some cases the advertised speed was missing completely or the only speed specified was “connection speed” which prevented the end-user from identifying whether it is an estimated maximum or advertised speed. In some other contracts the specified speed definitions resulted incomprehensible and unclear. However, overall situation in this area is gradually improving, in the case of virtual operators, remedy and change of the contract terms and conditions to comply with the Regulation has been achieved.

DE: The ISPs are typically still mentioning concrete figures for the respective speeds.

ES: The maximum available download speed for LTE is between 110 and 500 Mbps / Maximum upload available speed for LTE is between 37 and 75 Mpbs.

HR: ISPs are mostly in compliance, as they provide estimated maximum speeds in a geographical manner using mobile internet access service coverage maps with estimated speed values of network coverage in all locations for different network technologies.

[8] Note: remarks provided in this section only relate to countries where the NRA has reviewed the terms and conditions in contracts of fixed network ISPs.

IT : Mobile ISPs are obliged to specify minimum speed in contracts. Other parameters must be published by ISPs on their websites. AGCOM is considering whether to modify regulation in order to introduce other speed parameters as well.

LT: ISPs have improved their maps, where the realistically achievable speeds are shown (some of them introduced the maximum speed and quality technology (2G, 3G, 4G).

MT: Mobile providers do not advertise speeds, so in their terms and conditions there are just the estimated maximum upload and download speed for their networks.

PT: In most cases, information about estimated maximum and advertised download and upload speeds is provided by reference to the ISPs websites. Even in cases where these speeds are specified, no clear and comprehensible explanation for them is provided.

RO: The providers of internet access services include in the contracts the numerical values of the maximum and advertised speed in the case of mobile networks, but the procedure the consumer has to follow in order to measure these speeds and obtain remedies, if necessary, was missing from the contracts in most of the cases.

Lacking provision of definitions

10 countries (BE, CY, DK, EL, FR, HU, IE, LU, SE, UK) pointed out that these speeds are not contractually defined.

In CY, based on the provisions of national secondary legislation Decree 72/2017 (interpreting BEREC Guidelines BoR (16)127 para.142), ISPs are obliged to define advertised and estimated maximum upload and download speeds in their contracts only if they advertise speeds. No ISP advertises speeds, therefore they do not define any advertised and estimated maximum upload and download mobile speeds in their contracts.

In EL, ISPs have the obligation to define advertised and estimated maximum upload and download speeds of the IAS in contract terms by 5 October 2019 (same as in fixed).

FR explained that ISPs only define the theoretical maximum speeds for their mobile access offers, i.e. the maximal reachable speed for a given access technology.

Realistic usage conditions

In some countries (AT, BG, EE, LT), ISPs mention in their terms and conditions factors impacting the available speed. Reference is made to factors such as the device, network coverage, radio signal quality, network load and number of users in any given location, time of day, geographical factors, weather conditions, type of technology, density of the building (and where ISP is located), the used materials, distance between receiving terminal and transmitting antenna.

Overall assessment of answers provided to Questions 16 and 17

In general the answers to Questions 16 and 17 show that for a given country, speeds were contractually defined - respectively not defined - by both fixed and mobile ISPs. Out of those countries where mobile speeds are not contractually defined, only in CY fixed speeds are contractually defined.

Question 18. Have you completed any formal assessment of the ISPs' obligation to publish, according to Article 4(1), sub 2, the information referred to in Article 4(1), subs 1 a-e? Y/N

If yes, please provide details.

11 countries (CY, CZ, ES, HR, HU, IT, MT, NL, PL, SI, SK) completed formal assessment of the ISPs' obligation to publish the information referred to in Article 4(1), subs 1 a-e.

AT, HR: ISPs are obliged to notify their terms and conditions to the NRA before they launch a communication service, who in turn check if particular legal standards and compliance with the Regulation are met. Changes of previously approved terms and conditions must be notified as well.

CY: Following assessment of ISPs reports, NRA found out that ISPs comply with the relevant legislation.

CZ: ISPs are obliged to publicly disclose the draft agreement (contract) and also make it accessible via remote access.

DE: The NRA mainly applies a complaint-based approach and carries out regular spot checks of the respective formulations used by providers in their terms and conditions.

HU: The main findings (after a questionnaire based supervision) were that in some cases the key information to subscribers were given in a less user-friendly manner (therefore cannot be considered as a clear, easy-to-understand explanation as required by the Regulation). The traffic management measures applied by service providers influencing the quality of internet access service are not discussed in detail. In order to facilitate the comparability of the various packages and thereby ensuring transparency related to net neutrality, the NRA required the Uniform Service Description table to be published by each operator on its website; its content has not been harmonized with the provisions of the Regulation so far. Although all operators in HU are aware of the Authority's broadband measurement tool szelessav.net, its link cannot be found on any operator website, even though the tool can display the measured up- and download speed of the network, and in the case of mobile networks, results of coverage and availability measurements as well.

IT: AGCOM monitors and publishes data on the minimum contractually agreed speed. The monitoring results are published on a web page (https://www.misurainternet.it/confronto_banda_minima/) ensuring end-users the possibility to verify the contractually guaranteed minimum bandwidth. Moreover, AGCOM verifies ISPs' contractual conditions and terms of service and publishes them on its web site (https://www.agcom.it/carte-dei-servizi).

Question 19. Have you imposed additional transparency requirements regarding the publication of information referred to in Article 4(1), subs 1 a-e? Y/N

If yes, please provide details of the requirements.

6 member states (AT, BG, DE, FI, IT, SI) imposed additional transparency requirements regarding the publication of information referred to in Article 4(1), subs 1 a-e.

On the other hand, 29 NRAs (AT, BE**,** CZ, CY, DK, EE, EL, ES, FR, HR, HU, IE, LT, LU, LV, MT, NL, NO, PL, PT, RO, SE, SK, UK) did not introduce any additional transparency requirements regarding the relevant information from Article 4(1), subs 1 a-e.

AT: The NRA is discussing with ISPs additional transparency requirements on an informal level, where ISPs can present their views. Some non-binding templates/recommendations for ISPs are available on the NRA's website.

BG: The NRA elaborated an additional requirement about publishing on the ISP's website the information referred to in Article 4(1)b, regarding the consequences of IAS' speed reduction when the data cap is exceeded. That information should also be presented in the contracts.

DE: The ordinance for framework provisions on the promotion of transparency, publication of information and additional facilities for cost monitoring on the telecommunications market has entered into force on June 1st 2017. From that date on, the ordinance obliges fixed and mobile ISPs to provide more transparency when offering internet access services.

FI: The NRA has obliged operators to inform consumers about their right to a public IPv4 address in its memorandum about TSM Regulation.

IT: AGCOM adopted a resolution regarding new transparency measures in the broadband and ultra broadband retail offers, requiring the operators to make clear by which physical architecture the respective fixed access services are offered, as well as the quality of service that the end-user could expect. The definitions and technical characteristics of the access network architectures are introduced at the same time.

SI: Based on the General act (not legally binding yet, will be in autumn 2019) the NRA imposes on ISPs to inform end users the information regarding speeds on monthly bills, user portals or any other adequate transparent way that allows the user to get acquainted with this information at any time and in each billing period.

5.2 Article 4(2) – procedures for end-user complaints

Question 20. Have ISPs established “transparent, simple and efficient procedures to address end-user complaints…” according to Article 4(2)? Y/N

If yes: What kind of procedures have there been established by ISPs (e.g. hotlines, complaint templates)?

Is there an industry wide approach in relation to these procedures? Y/N

If yes, was this approach:

i. imposed or facilitated by the NRA,

ii. prescribed by national legislation,
iii. voluntarily agreed upon by the market players,
iv. other _____

Out of the 29 Members States that responded to this question, only IE have stated that ISPs haven't established "*transparent, simple and efficient procedures to address end-user complaints…*" according to Article 4(2) of the TSM. For the rest, in general, such procedures were already in place before the Regulation entered into force, as providers of IAS were required to do so, as part of already existing telecoms legislation. The means by which the end-users can file a complaint on open internet specific issues are the same as for the rest of the complaints, the most common being e.g. contact form, hotline, email and fax.

Regarding industry-wide approach, 20 of the responding Member States (AT, CY, CZ, DE, DK, EL, FR, HR, HU, IT, LT, MT, NL, NO, PL, RO, SE, SI, SK, UK) replied positively, whereas 9 (BE, BG, EE, ES, FI, IE, LU, LV, PT) mentioned that this is not the case, the details related to it being outlined in Table 9.

Industry-wide approach	Respondent	Number
Imposed or facilitated by the NRA	AT, CY, DE, IT, RO, UK	**6**
Prescribed by national legislation	AT, CY, CZ, EL, HR, HU, LT, SI, SK	**9**
Voluntarily agreed upon by the market players	CZ, FR, MT, NL, NO, PL, SE, SI	**8**
Establishment of an independent private complaints board by the telecom industry in cooperation with the Danish Consumer Council	DK	**1**

Table 9. Industry wide approach regarding procedures for end-user complaints

5.3 Article 4(3) – additional transparency requirements

Question 21. Did you nationally (e.g. NRA, Ministry) provide guidance or impose additional transparency or information requirements on ISPs following the enforcement of the Regulation? Y/N

If yes, please provide details of the requirements.

According to Article 4(3), Member States could introduce additional monitoring, information and transparency requirements. Apart from the ones already in place, only EL and IT reported providing guidance or imposing additional transparency or information requirements:

EL: Information on traffic management practices, network QoS parameters and limitations on data volumes or on the use of terminal equipment, specialized services, internet access speeds, remedies available to consumers for speed discrepancies.

IT: Transparency obligations in advertising and in contracts for (ultra)broadband IAS: inter alia to inform end-users of the type of architecture through which the IAS is offered (e.g. copper, fiber or a mix of both).

5.4 Article 4(4) – monitoring mechanism

Question 22. Is there an NRA or national interpretation of "significant discrepancy, continuous or regularly recurring"? Y/N

If yes, how are these terms interpreted?

If yes, was the definition:

i. imposed by the NRA (e.g. using Article 5(1)),
ii. voluntarily agreed upon by the market players
iii. other_____

Regarding Article 4(4) of the Regulation, comparing to the previous reporting period in which 6 Member States (CY, CZ, DE, HR, IT, MT) reported that competent authorities provided national interpretation of *"significant discrepancy, continuous or regularly recurring"* regarding the actual performance, in between 01 May 2018 to 30 April 2019, 4 additional Member States (BG, EL, ES, SI) reported doing so. The different approaches used are outlined in Table 10.

Approach	Respondent
Definition imposed by the NRA	EL, ES
Definition voluntarily agreed upon by the market players	-
Non-binding administrative notice issued by the NRA	BG, SI

Table 10. Different approaches of interpretation used by the NRAs

The additional NRAs also gave a material interpretation of the terms, as can be seen in Table 11[9].

Respondent	Interpretation
BG	Significant continuous discrepancy – 2 consequent weeks in one billing period; Regularly recurring discrepancy – more than 1 temporary discrepancy; A temporary discrepancy – 3 consequent days in one billing period.
EL	A continuous or regularly recurring discrepancy is considered to exist when it occurs in 2 out of at least 3 measurement samples, taken by the ISP in consecutive days.
ES	There has to be a breach of either minimum or normally available speed. It has to be "continuous".

[9] See previous Implementation Report, Q20, illustrating those cases where there already was such an interpretation, https://berec.europa.eu/eng/document_register/subject_matter/berec/reports/8256-report-on-the-implementation-of-regulation-eu-20152120-and-berec-net-neutrality-guidelines.

IT	A continuous or regularly recurring discrepancy is considered to exist when minimum contractual speed is not met twice in 45 days. In such a case, the current regulation let users terminate the contract without additional costs. In order to check minimum speed reached by a user, the user has to run a free software (Ne.me.sys), certified by ISCOM, for 24 hours. Ne.me.sys samples measurements every 15 minutes. Minimum speed is calculated as the 95-quantile of measurements in the interval.
SI	Minimum speed: at least one of the correctly performed measurements, regardless of the time of the day, falls at the specified minimum speed Normally available speed: the average of all correctly performed measurements outside the peak hours is lower than the contractually agreed normally available speed (the measurement with the highest and lowest speed are excluded from the calculation).

Table 11. Interpretation of the terms

The rest of the responding NRAs mentioned that they do not provide any new additional guidance or national interpretation, or they do not provide them at all.

Question 23. Do you collect or monitor the number of end-user complaints? Y/N

If yes, what was the level of end-users' complaints about the performance of the internet access service, relative to contracted parameters (speeds or other QoS parameters)?

More than 2/3 of the responding NRAs (AT, BE, BG, CY, CZ, DE, DK, EL, ES, HR, HU, IE, IT, LT, LU, LV, MT, NL, PL, PT, RO, SE, SI) have reported that they are monitoring the number of end-user complaints, whereas 6 NRAs (EE, FI, FR, NO, SK, UK) indicated not to do so. FR has reported that it is not yet monitoring formal end-user complaints concerning discrepancies of performances, but that end-users can now report such problems on the new signalling platform "j'alerte l'Arcep" and UK has reported they monitor consumer complaints to their Consumer Contact Team and feed them into OFCOM's monitoring and enforcement work.

Based on the data collected, end-user complaints are usually related to discrepancies between actual and contractual speed, as well as other quality of service (QoS) parameters, as set out in the table below.

Respondent	Information related to NN complaints
AT	The total number of requests submitted for conciliation were 1676 of which 94 requests were related to the quality of mobile networks and 26 requests regarded the quality of fixed networks. There was a large number of general inquiries including net neutrality issues (e.g. requests regarding zero rating, port blocking and minimum content according to Article 4 TSM-regulation).
BE	Complaints handled by the Ombudsman: 126 regarding internet speed, 5 related to irregularities with respect to the zero-rating of mobile data.

BG	Most complaints were about non-conformity with the agreed speeds, but in case of mobile IAS it is difficult to distinguish if the non-conformity is due to poor coverage.
CY	Only few complaints relative to QoS parameters, mainly fixed broadband connections. No breaches of the regulation have been determined.
CZ	Only tens of complaints, which represent approximately 1% of the total amount of complaints and were related to a failure to comply with the quality parameters agreed upon in the contract, limitation of the choice of the terminal equipment, and traffic management measures.
DE	Around 1500 complaints in total out of which about 200 substantiated complaints based on the measurements done with the NRA's measurement tool and by considering the respective instructions.
DK	No complaints.
EL	214 complaints (22% increase).
ES	187 complaints (0.54% of the total amount).
HR	2018: 26 complaints regarding internet QoS in fixed networks, 14 complaints regarding internet QoS in mobile networks, 64 complaints (via HAKOMetar certified tool) regarding achieving minimum speed.
HU	No complaints.
IT	Complaints mostly related to minimum speed.
LT	Low number of complaints concerning speeds and other QoS parameters.
LV	5 complaints regarding QoS (9% of total ECS complaints).
MT	11 complaints regarding discrepancies between the contracted speed and the actual speed performance of the service.
NL	16 complaints via ACM's website and 7 from external (public) forums primarily concerning the availability of IAS at the consumers address, the speed of the IAS compared to the advertised/maximum speed or to another ISP and general service levels.
PL	164 complaints (3% of the total) regarding transparency issues and negative impact of linear IPTV on IAS, blocking access to foreign portals, blocking IP/TCP ports required for other specific services, discrimination of the traffic.
PT	808 complaints (5.9% of total) – service faults/malfunctioning; 422 complaints (3.1% of total) – internet speeds below what is advertised/subscribed; 8 complaints (0.1% of total) – FUP and traffic shaping.
RO	Approximately 70 complaints regarding the performance of the IAS (fixed and mobile) – 2.8% of total.
SE	Approximately 20.
SI	3% of all user complaints.

Table 12. Level of end-user complaints about the performance of internet access services

Question 24. Have specific additional remedies been introduced for consumer redress in relation to non-conformance of IAS with the contract terms (e.g. legal action before courts and/or NRA, right to early termination, compensation)? Y/N

To foster end-user rights, seven NRAs (EL, ES, HR, IT, LV, SE, SI) have introduced additional remedies for end-user complaints in case of non-conformance of the internet access service with the contract terms. 22 of the responding NRAs (AT, BE, BG, CY, CZ, DE, DK, EE, FI, FR, HU, IE, LT, LU, MT, NL, NO, PL, PT, RO, SK, UK) did not introduce any specific remedy, as general national legislation already covers non-conformance with the contract terms.

Question 25. Do you currently provide any IAS quality monitoring tool for consumers to use? Y/N

- If yes, briefly describe this tool, and say whether you consider it as certified according to Article 4(4) and in line with BEREC Guidelines, para. 161.
- If not, please outline any plans you may have for setting up such a tool.
- Is this tool used by the NRA to investigate any potential deviations in speeds or any other contractual parameter or – beyond the scope of Article 4(4) – for detecting infringements of the Regulation (e.g. throttling, blocking)?

For monitoring the performance of their internet access services, end-users could use the measurement tools made available by NRAs in 20 Member States (AT, BE, CY, CZ, DE, DK, EL, HR, HU, IT, LT, LU, LV, NO, PL, PT, RO, SI, SK, UK), while in the rest of the Member States (BG, EE, ES, FI, FR, IE, MT, NL, SE) such tools are not available yet.

Out of the 20 measurement tools available during the reporting period, the ones in CY, DE, HR[10], IT, LU, LV, PL, RO were considered as a certified tool according to Article 4(4) and in line with para 161 of the BEREC Guidelines, while in AT and PT the NRA is still analysing the certification of their own measurement tool.

In Member States where there is no measurement tool available, most NRAs (BG, FI, FR, IE, MT, NL) are supporting and/or contributing to the BEREC project regarding the BEREC QoS measurement tool and will use it as a base for their national measurement tool. EL and SK are also considering adopting the tool developed by BEREC.

DK reported they are operating a broadband measurement tool, but it will be assessed whether the results of this tool can be used in connection with Article 4(4) or if the tool can be used in conjunction with BEREC measurement tool currently in development.

In this context, FR mentioned that it is currently collaborating with the measurement ecosystem[11] to enhance the quality of the measurements on a whole. A code of conduct which

[10] Only for fixed internet access

[11] The mentioned measurement ecosystem consists of ISPs, developers of measurement tools, academics and consumer associations.

contains transparency criteria (on which tools must commit to communicate) and best practices regarding test protocol and results presentation, has been published by ARCEP. The NRA has also co-constructed with the ecosystem a technical solution, consisting of an API developed in the ISP modems, which allow measurement tools to characterize the end user environment. The national implementation of the future QoS measurement tool developed by BEREC will benefit from the aforementioned work.

All the reported monitoring tools measure the speed of end-users' individual internet access service in fixed and/or mobile networks. The monitoring mechanisms also allow users to measure the quality of service parameters (generally: latency, jitter, packet loss). 6 NRAs (AT, HR, HU, LU, PT, SI) reported their measurement tool can go beyond the scope of Article 4(4) by detecting infringements e.g. throttling, blocking.

6 Article 5(1)

Question 26. Did you impose any QoS requirements on any ISP under the Regulation (EU) 2015/2120 (other than definition of contractual speeds)?

If yes, which requirements were imposed?

All NRAs responded negatively to this question.

Question 27. What approach have you taken to measure the **availability of high quality internet access services**:

i. market survey without requesting information from ISPs,
ii. information request from ISPs,
iii. analysis of complaints and end-user reporting
iv. technical network monitoring
v. other, please specify _____

Is there any change compared to the previous period? Y/N

The NRA responses suggest that the most popular approach to measuring the availability of high quality internet access services is through information requests from ISPs, as well as through analysis of complaints and end-user reporting.

Approach	NRAs	Number
Market survey without requesting information from ISPs (e.g. checking ISP's offers on their web pages)	CY, CZ, EE, HU, IT, PT	**6**
Information request from ISPs	BE, BG, HR, CY, DK, EE, EL, FI, FR, HU, IT, SK	**12**

Analysis of complaints and end-user reporting	BG, HR, CY, CZ, DK, EL, FI, FR, IT, PT, RO, ES	**12**
Technical network monitoring	AT, BE, CZ, GR, HU, IT, LV, NO, PL, PT	**10**

Table 13. Approach of NRAs regarding the availability of high quality internet access services

Furthermore one NRA (DE) indicated that it uses its broadband measurement mechanism (see question 25), while another (UK) reports using a mobile crowdsourced app. Another NRA (PL) purchases reports from a third party speedtest tool used by end-users. Two NRAs (RO, IT) reported that they publish statistics on the quality of the fixed and mobile internet service.

Question 28. If you performed measurements of internet access service quality, please report the main findings in relation to the provisions of the Regulation.

Slightly less than half (12 out of 29) of NRAs reported that they perform some form of measurements of internet access service quality. This includes measurements by NRAs themselves as well as measurements obtained from crowdsourced measurement applications and tools. In general, measurements have been made for both fixed and mobile networks.

CZ reported that random tests during traffic peak hours show a significant decrease in throughput on LTE networks, as well as an increase in latency. Tests in the real network environment detected traffic management to deal with the low capacity of distribution points.

EL reported that though speed increased, there was also an increase in delay, jitter and packet loss during peak hours, mainly attributed to the high congestion rate.

IT reported that internet access service quality measurements for each Italian region for each operator are performed and published every six months.

NO reported that the measured capacity in the networks were both stable and high and that there was no evidence of specific port blocking.

RO reported that though users experienced an increase in fixed download speeds, there was a slight drop in mobile download speeds over 2018.

8 NRAs (AT, HR, FR, DE, HU, LT, PL, PT) indicated that there has been an overall increase in the network speeds and capacity or at least there has been no degradation compared to the previous reporting period. This increase has been among others attributed to the expansion of next generation networks, as well as the broader use of LTE technology (in mobile networks).

Question 29. Have you taken any other steps to ensure compliance with **Articles 3 and 4** according to **Article 5(1)** not mentioned elsewhere in this questionnaire? Y/N

If yes, which?

Only three NRAs (IT, RO, ES) have taken additional steps to ensure compliance with the above Articles.

IT referred to a tool that allows users to investigate deviations between minimum QoS contractual parameters and complain if the QoS is not met. If the QoS is still not met after 45 days, the end-user can terminate the contract without penalty.

RO reported that it took steps to develop guidelines aimed at providing a common understanding of the implementation of Article 4(1)d. These guidelines are intended for ISPs and will include instructions on measuring actual data transfer rates, the conditions to be met when performing measurements and the tool used for that purpose. These guidelines are expected by the end of 2019.

ES has developed a new method for measuring different types of internet speed in order to resolve end-user claims.

7 Article 6

Question 30. What rules on penalties to infringements of **Articles 3, 4, and 5** pursuing to **Article 6** of Regulation (EU) 2015/2120 do you apply?

24 of the NRAs (AT, BE, BG, HR, CY, CZ, DE, DK, EE, EL, FI, FR, IT, LT, LV, MT, NL, NO, PL, RO, SI, SK, SE, UK) stated that they may impose fines in cases of infringements of the abovementioned Articles. These fines vary in size ranging from 200 Euros (SK) to 3 million Euros (EL) according to the national regulation/legislation, or they may be defined as a percentage of the annual turnover of the relevant ISP, ranging from 2% up to 10%.

FI and NO also reported that they may hand out non-monetary penalties and issue orders to correct / cease unlawful activities and lay down conditions that must be met for the IAS to be compliant with Articles 3, 4 and 5.

3 NRAs referred only to their national legislation, without detailing the rules on penalties: The “Electronic Communications Act” in HU**,** the “Loi modifiée du 27 février 2011 sur les réseaux et les services de communications électroniques” in LU**,** and the “Telecommunications Act (Ley 9/2014, may 9th)” in ES**.**

Furthermore, 2 other NRAs (IE, PT) stated that enforcement powers are not yet in place; PT is currently expecting the sanctioning regime’s approval from the national legislator.

Question 31. Have there been any court proceedings about any of your NN cases?

5 NRAs reported that there have been court proceedings on net neutrality in their member states.

AT	• A1 Telekom Austria AG appealed against decision R3/16 of the regulatory authority: ○ Prohibition of prioritising a VoD service for lack of a specialised service, within 3 years ○ Free assignment of public IPv4 at customer demand ○ Increase in period for disconnecting IP connections from 24 hours to 30 days. • A1 Telekom Austria AG appealed against decision R5/17 of the regulatory authority: ○ Prohibition of applying traffic-shaping to an add-on package with zero-rated audio and video streaming services. The decisions of the Austrian NRA are available here: https://www.rtr.at/en/tk/nn_procedures
DE	StreamOn: In its decision of 11 November 2018, the Administrative Court in Cologne ruled in its interim proceedings that BNetzA is not hindered to enforce its decision of 15 December 2017, forbidding the video throttle contained in the zero rating offer "StreamOn". In this ruling, the Administrative court implicitly also stated that, in a summary assessment, it regarded BNetzA's decision as legally valid, namely that limitation of video traffic to a maximum speed of 1.7 Mbps violates the principle to treat all traffic equally according to Article 3(3) TSM Regulation. Telekom has appealed the interim ruling. On 6 March 2019 the Higher Administrative Court in Münster has stopped BNetzA in a preliminary order in the interim proceedings from enforcing the decision of December 2017. The final court ruling in the interim proceedings is still outstanding. Moreover, the main proceedings are still pending. Vodafone Pass: There were no court rulings in administrative court proceedings against BNetzA's decisions. However, there was to BNetzA's knowledge, one court ruling in civil proceedings: A consumer association sued Vodafone for various clauses in the terms and conditions of Vodafone Pass. On May 8, 2019, the district court of Düsseldorf ruled inter alia that the clauses used are misleading insofar as it is not obvious for the end-user that (e.g.) voice- or video telephony is not zero-rated. Information on such usage constrictions was considered essential according to the Act Against Unfair Competition (UWG). Regarding tethering, the court argued that counting data consumed by tethering against the data allowance does not constitute a violation of Article 3(1). The main reason for this was that tethering is not contractually forbidden.
IT	On 2 August 2018, AGCOM published a decision stating that end-users have the right to freely choose their broadband router (AGCOM Resolution n. 348/18/CONS). According to AGCOM, ISPs cannot require end-users to rely exclusively on the router supplied by the ISP itself. This decision was appealed and the appeal proceeding is pending.
NL	T-Mobile introduced a zero-rating offer, which resulted in legal proceedings. The result was that ACM found the offer to be in line with the Regulation. An NGO

	attempted to appeal this decision, but the court decided that ACM was correct in its assessment that the offer was allowed.
RO	ANCOM decided that a certain traffic management practice constitutes an infringement of Article 3 (3) para. 3 of Regulation 2015/2120 and ordered that ISP to stop the practice. The ISP challenged ANCOM's decision in front of the Romanian Courts and asked for both the suspension and the annulment of the decision. For the moment, the Courts ruled in favour of the suspension of the decision (the decision is not final and ANCOM has appealed it) until a decision is taken by the Courts on the annulment of ANCOM's decision.
SE	The ruling pertains to two mobile offers from Telia on April 18, 2016, "Free surf on social media" (Sociala) and "Free surf listening" (Lyssna). In summary, PTS has found in its supervision that Telia, in connection with the two offers, is applying traffic management measures in violation of Article 3(3) of the TSM Regulation. Telia was instructed by PTS to discontinue the traffic management in due course, when the end user is still able to use the specified services and applications included in each of the offers, whilst other data usage is blocked. The decision of PTS was appealed to the Administrative Court of Stockholm, which on September 28 2018 rejected the appeal. The ruling has taken legal effect. After the ruling of the court, Telia has adjusted the offer, in making all applications treated equally when the data volume included in the subscription is consumed.

Table 14. Court proceedings on net neutrality

8 Annex I: Abbreviations for countries[12]

Throughout the report we have used Eurostat country codes as abbreviations for the country names (http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Country_codes). The country codes for the NRAs to the questionnaire are shown in the following table.

Austria	AT	Latvia	LV
Belgium	BE	Lithuania	LT
Bulgaria	BG	Luxembourg	LU
Croatia	HR	Malta	MT
Cyprus	CY	Norway	NO
Czech Republic	CZ	Poland	PL
Denmark	DK	Portugal	PT
Estonia	EE	Romania	RO
Finland	FI	Slovakia	SK
France	FR	Slovenia	SI
Germany	DE	Spain	ES
Greece	EL	Sweden	SE
Hungary	HU	The Netherlands	NL
Ireland	IE	United Kingdom	UK
Italy	IT		

Table 15. Country codes

[12] The annual country reports on Open Internet are available via the official EU link: https://ec.europa.eu/digital-single-market/en/news/annual-country-reports-open-internet-national-regulators-2019