



NMHH

Nemzeti Média- és Hírközlési Hatóság

The State of the Open Internet in Hungary 2019

Annual report on net neutrality for the period from 1 May 2018 to 30
April 2019

28 June 2019



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1 HUNGARIAN REGULATIONS ON NET NEUTRALITY

Net neutrality regulation in Hungary is based on a number of components.

1. As Hungary is an EU Member State, *Regulation (EU) No. 2015/2120* (hereinafter: **EU Regulation**), amending *Directive 2002/22/EC on laying down measures concerning open internet access, 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*, is directly effective and applicable.
2. NMHH Decree 2/2015. (III. 30.) on the Detailed Rules of Electronic Communications Subscriber Agreements (hereinafter: **Electronic Communications Decree**) has, since the entry into force of the EU Regulation last year and in the interest of ensuring transparency, already contained provisions on net neutrality.
The provisions of the Electronic Communications Decree require operators supplying internet access services to provide access to their internet services for subscribers and users in the quality specified in their general terms and conditions and specific subscriber agreements. The Electronic Communications Decree also requires operators supplying internet access services to publish on their websites and continuously update standard service description tables on each internet access service plans.
3. An additional national legislation is *NMHH Decree 13/2011 (XII.27.) on the requirements for electronic communications service quality relating to the protection of subscribers and users, and on the authenticity of billing* (hereinafter: **Quality of Service Decree**) that requires all fixed and mobile internet access operators to specify in their subscriber agreements certain quality indicators guaranteed by the operator¹ such as offered bandwidth, as well as guaranteed download and upload speeds.

The purpose of the national regulation (transparency, protection of end-user rights) currently in force is similar to those incorporated in the Regulation, but it regulates not only internet service but also the quality of other electronic communications service.

In the context of net neutrality, there has been no change in national legislation as compared to the 2018 annual report.

2 MONITORING THE IMPLEMENTATION OF THE EU REGULATION

Internet use and internet-based digital economy have become decisive factors in our lives. Therefore, the National Media and Infocommunications Authority (hereinafter: **NMHH** or **Authority**) monitors and controls net neutrality in Hungary as well as compliance with the relevant rules as a priority issue. NMHH performs its activities with regards to net neutrality as listed under the supervisory powers stipulated in Act C of 2003 on Electronic Communications (hereinafter: **Electronic Communications Act**).

¹ Guaranteed download and upload speeds: the lowest data rate that is specified in the subscriber agreement to be made available for uploading at the subscriber access point concerned.

Resulting from its supervisory authority, NMHH controls compliance with net neutrality rules by operators during its annual planned and, in justified cases, its unplanned monitoring activities. In addition, the NMHH will also proceed if subscribers of electronic communications services submit requests or reports or if operators submit reports.

The NMHH, as a summary of its tracking activity, prepares an annual report in accordance with the provisions of EU Regulation, with the content outlined² in the BEREC Guidelines. The NMHH complies with its obligations under the EU Decree by preparing, and publishing the report and sending it to the Commission and the BEREC.

In last year's reporting period, the Authority continued its tracking activity regarding the practical implementation of the net neutrality provisions of the EU Regulation. In order to monitor market processes, it checked the websites and advertisements of the service providers, and conducted random inspections, examining the General Terms and Conditions and their amendments (hereinafter referred to as: "**GTC**") of the mobile and fixed internet access service providers with the largest numbers of subscribers in terms of net neutrality, and launched a comprehensive market surveillance control³ (hereinafter referred to as: "**Planned activity**") to ensure the continuous availability of non-discriminatory internet access services and to control transparency.

The results of the Authority's tracking activity have been summarised in the chapters below.

2.1 Contractual and commercial conditions

The NMHH inspected the network neutrality aspects of contractual and commercial terms with regards to net neutrality primarily in terms of the zero tariff plans most favoured by mobile operators. The common feature of the zero tariff plans was that the data traffic generated by the thematic services did not reduce the data quota for the mobile internet subscription.

- a) In case of the first such tariff plans, after using the amount of data included in the quota, the services available for zero tariff plans still remained available to subscribers under the original terms. The NMHH initiated procedures against 3 service providers, and concluded that the commercial practices investigated also qualify as discriminatory traffic management measures and as such violate the rules for net neutrality. Accordingly, NMHH banned such unlawful behaviour and ordered the operator to discontinue the unlawful differentiation between various types of internet traffic.

All three cases have been brought before the court, as the operators in question challenged the authority's decisions. Of the 3 cases, one has been concluded in practice (see detailed description of the court's decision in the annual reports of the previous years), while 2 are still underway, as the Hungarian court initiated a preliminary ruling procedure at the Court of the European Union on the interpretation of Section 3 of the EU Regulation.

2 BoR (16) 127

3 The Authority launched a Planned activity under reg. no. HPF1/2019, in order to monitor observance of the provisions concerning open internet by operators.

- b) The operators introduced new types of thematic zero tariff plans on the market in 2017 and 2018. Their common feature was the unlimited use of the thematic content and applications included in the package until the package quota ran out. Once the user exceeded the quota, the thematic content, like any other content or application not listed in the zero tariff, was slowed down or restricted.

The NMHH examined the plans in question by occasional official inspection, and decided whether to initiate official procedures in awareness of the information obtained.

2.1.1 Vodafone Pass

The operator introduced new thematic zero tariff plans called “Social Pass” and “Connect Pass” (hereinafter collectively referred to as “**Vodafone Pass**”) to offer “free unlimited community experience”.

With regards to operators’ service plans, the NMHH launched an investigation on the subject of compliance with net neutrality rules (Articles 3(3) and 3(2) of the EU Regulation) and other rules on electronic communications.

In the course of the inspection, the Authority did not expose and circumstance substantiating the application of negative discrimination by the service providers with respect to specific contents, services or applications or their specific categories, and therefore closed the inspection.

2.1.2 Telecom thematic option

The operator has provided new zero tariff mobile internet offering available to subscribers under the name “Korlátlan közösségi média és navigáció” (Unlimited Community Media and Navigation) (hereinafter referred to as “**SMN**”) and “Korlátlan chat (csevegés)” (Unlimited Chat) (hereinafter referred to as “**Chat**”).

The NMHH launched an investigation on the subject of compliance with net neutrality rules (Articles 3(3) and 3(2) of the EU Regulation) and compliance with the other rules on electronic communications pertaining to service plans.

In the course of the inspection, the Authority did not expose and circumstance substantiating the application of negative discrimination by the service providers with respect to specific contents, services or applications or their specific categories, and therefore closed the inspection.

- c) Besides the zero tariff plans, the NMHH initiated an inspection concerning an offer, different from the above in that it provides unlimited domestic quota, meaning that it is no longer significant that some applications and content are not included in quota of the tariff plan.

2.1.3 Telekom’s “Net Korlátlan” (Net Unlimited) tariff plan

The operator has made available a new “Net Korlátlan” (Net Unlimited) tariff plan to subscribers in 2017. In addition to unlimited internet use within Hungary, the plan also provides a 15 GB quota in the EU. This Net Unlimited plan is only available for

personal use, and the SIM card associated with the tariff plan may only be inserted in mobile phones. (Pursuant to contractual terms, it is a breach of contract if the SIM card is used by the subscriber in a device that is not suitable for making mobile voice calls).

Additionally, for the purpose of maintaining network integrity and service security, the operator significantly reduces the mobile internet speed of certain types of traffic (P2P⁴, VPN⁵) and modes of use (Bittorrent) compared to speed offered by the tariff plan, i.e. it applies a quasi-limitation.

Although the service provider discontinued the sale of the aforementioned tariff plan in the meantime, **a new tariff plan called Unlimited Net has been launched with unaltered conditions** after closure of sales, while continuing to offer the old tariff plan with unaltered conditions to those who contracted it before.

In connection with the previous tariff plan, the NMHH conducted an **inspection** concerning adherence to the rules of net neutrality, **as a result of which it has established that** the service provider has, concerning the “Net Unlimited” tariff plan, **presumably applied traffic management measures that did not meet the requirements outlined in Section 3 (3) of the TSM Regulation.**

Given that the previous tariff plan – despite it is no longer possible to contract it – is offered with unaltered conditions to those who contracted it earlier, **the NMHH saw it justifiable concerning the old and the new tariff plan to investigate the suspicions of the previous inspection further, and therefore launched an official procedure after 30 April 2019. The subject of the procedure is the examination of the lawfulness of the regulatory measures applied by the provider with respect to its “Net Korlátlan” (Net Unlimited) and “Korlátlan Net” (Unlimited Net) tariff plans and the free choice of terminal equipment.**

2.2 Restricting end-user rights

NMHH monitors restrictions on end-user rights as a priority issue. The Hungarian legislation provides legislative guarantees (Electronic Communications Act) for end user rights and, on the other hand, the Electronic Communications Decree specifies the compulsory content elements of the subscriber agreements.

Over the years, the NMHH traced compliance with the rules on end user rights pertaining to net neutrality, focusing on checking the terms and conditions in the operators’ **GTC**. In the reporting period, the Authority investigated this issue in detail as part of its **Planned activity**, in addition to the aforementioned inspections.

2.2.1 Restricting the use of subscriber’s terminal equipment

Within the context of the service provider data provided in the course of the market surveillance conducted and the review of the GTCs, NMHH assessed internet access

4 P2P: Peer-to-peer

5 VPN: Virtual Private Network

operators for their practices on subscriber's terminal equipment, with a special emphasis on the conditions of connecting subscriber's terminal equipment not provided by the ISP.

Given that based on Preamble 5 of the Decree, internet service providers should not impose restrictions on the use of terminal equipment connecting to the network in addition to those imposed by manufacturers or distributors of terminal equipment, therefore any possible limitation imposed by the service provider goes against the provisions of the Decree.

In case of mobile internet service providers, the replies received do not reveal any limitation by service providers that would expressly ban subscribers from using the tools they freely select, however, the lawfulness of the limitation concerning the type of terminal equipment used by subscribers, mentioned in connection with the Unlimited Net tariff plan in the previous chapter, is being examined by the Authority.

Of the providers examined, three indicated that the point of delivery of the service is understood as the ethernet port of the terminal equipment (modem) provided by the operator, and as such, it is understood as part of the network. Accordingly, the terminal equipment is understood as the equipment connected to the ethernet port by the subscriber.

Among fixed-access service providers, it may occur that the network termination point or the connected device (modem or router) contains the proprietary software of the service provider, with which subscribers may access other OTT services; therefore, and in order to preserve the network's integrity, the free choice of equipment of the subscriber only extends to the equipment connected to this device. Furthermore, no service provider practice limiting terminal equipment can be observed.

In general, the investigation did not reveal any excessive irregularities in connection with net neutrality; therefore, the Authority is not planning a comprehensive investigation on the issue.

2.2.2 Prohibition⁶ of tethering

In close connection with the previous point examining free usage of terminal equipment, the NMHH saw fit to assess whether service providers limit internet sharing in itself or through limitation of the right to select the terminal equipment.

The service providers, based on their answers given to the questions of the Planned activity, do not have a single package prohibiting tethering, i.e. the connection of a device without internet access to another device suitable for internet connection. The corresponding GTCs do not contain any parts expressly prohibiting tethering; they only stipulate for a few service providers that the datalink and the amount of data downloaded may not jeopardize the proper functioning of their network and that operators may take preventive or recovery measures resulting in slower or restricted traffic to prevent network overloads or network crashes, or to provide other subscriber services.

For the above reasons, the NMHH does not plan a comprehensive inspection for tethering, but it intends to track the practical implementation of the slowing or limiting measures imposed on the aforementioned preventive or corrective traffic.

⁶ Tethering: Connection of a device without internet access to another device suitable for internet connection (e.g. mobile phone or tablet), and sharing internet access this way.

2.3 Performance of the internet access service

NMHH used a number of different methods to assess the parameters of the internet access services offered by internet service providers. One method was the data collection of the service providers in the course of the Planned activity, which was supplemented with a review of the GTCs of market leading service providers in terms of the traffic management tools applied. On the other hand, the NMHH used in its broadband measurement system the results of the measurements initiated by subscribers to examine whether the actual service quality experienced by subscribers corresponds with the service values listed in the offers of service providers.

2.3.1 The traffic management tools employed

Based on Preamble (8) of the Decree, when providing internet access services, providers of those services should treat all traffic equally, without discrimination, restriction or interference, independently of its sender or receiver, content, application or service, or terminal equipment.

A key point of asserting the rights provided by the Regulation is the traffic management tools applied by the service providers. For this very reason, the Authority targeted in its Planned activity the examination of the traffic management practices of the service providers, checking how the practice applied adheres to the regulations in force, whether the “reasonable measures” permitted by the Decree are applied, and if the measures applied meet the conditions mentioned in the regulations⁷.

The examination of traffic management is summarised below, broken down to several sub-sections:

2.3.1.1 Varying levels of priority in terms of data traffic

The Authority first examined the possible application of priority levels by the service providers in connection with the traffic management measures. The objective was to clarify whether the operator applies any discrimination among users when accessing various services, applications or contents, and if so, what is the objective reason for this.

According to the fixed-access service providers examined, in case of normal operation – in a well-dimensioned network – there is no need to establish priority levels to manage congestions, as the quality undertaken towards the subscriber even without this. At the same time, **certain business products have higher guaranteed bandwidths, and receive a higher priority in case of congestions.**

The mobile service providers gave different answers concerning the application of the priority levels. **Some** among them **do not apply priority levels at all**; some **others only apply them to mobile services substituting fixed-access services** (in order to protect the mobile network, protecting the network from fixed data management handling greater volumes of data) while **there are other service providers who classify subscribers of a**

⁷ The conditions are listed in the second subparagraph of Section 3 (3) of the Regulation. Reasonable measures must be: transparent, proportionate, non-discriminatory, may not include the tracking of specific measures, and may not be maintained for a period longer than necessary.

particular service into a lower priority level upon overloading (congestion) of the network.

Based on the replies returned, the last mentioned case is, both for mobile and fixed-access service providers, when the suspicion of free access to information and contents not being fully freely granted to certain circles of users arises, and when certain users have easier access than others to these information. **These traffic management measures are not regarded as reasonable traffic management measures due to the element of discrimination.** At the same time, since these discriminations are **applied by the service provider in situations with a risk of network congestion, they may qualify as other measures beyond the extent of reasonable traffic management measures**, provided the service provider adheres to the principle of temporariness and proportionality, as specified in the Decree.

Although the practice of prioritisation service providers did not show any application violating the provisions of the EU Regulation, its continued tracking by the Authority is recommended.

2.3.1.2 Management of traffic congestions

The management of traffic congestions mentioned in the above example is therefore of key importance in deciding whether the measures applied by the service providers comply with the provisions of the EU Regulation. In order to get a clearer picture, the Authority dedicated a part of the Planned activity to the practice applied by the operators in the course of managing traffic congestion.

Landline operators, based on their responses, either do not use congestion management or only use it as an interim measure with manual configuration, i.e. they apply traffic prioritisation in order to mitigate the situation.

Based on the responses by mobile operators, none of them use any preventive or restrictive measures either, in the event of actual or potential traffic congestion in subscriber traffic. Network capacity monitoring is carried out continuously and the networks are designed to be free of congestion, assuming a normal operations without any issues. The mobile service providers do not differentiate periods of large traffic in the planning process.

As for the duration of the traffic management measures to be applied at congestion or the prevention of congestions, no service provider has an internal protocol that would regulate this issue in detail.

Although the practice of congestion management applied by service providers did not show any application violating the provisions of the EU Regulation, its continued tracking by the Authority is recommended.

2.3.1.3 Application independent traffic management tools

Application independent traffic management tools are those that manage traffic without deep content inspection or analysis of data traffic. From a certain perspective, a significant part of the measures applied in the course of managing the congestions examined in the previous chapter are also classified application independent, but the case of congestion was examined separately by the NMHH, due to its exceptional position and therefore, significance.

In the present chapter, the Authority wished to assess all other devices used by internet access service providers, that are not connected directly to congestion management.

Based on their replies, the fixed-access service providers examined do not apply such devices.

Mobile operators, according to their own declaration, do not use “other” application independent traffic management measures, with the exception of one of the operators, which **uses “shaping” for setting the basic bandwidth for better customer experience and more favourable network characteristics.**

Based on the replies received, the operators do not violate the provisions of the EU Regulation, but occasional control by the Authority may be reasonable.

2.3.1.4 Application dependent traffic management tools

Application dependent traffic management tools and technological solutions like DPI⁸ can detect specific content, application or service within the data traffic investigated, so they may be especially suitable for intervention by the service provider violating net neutrality.

All operators reported the use of the DPI technology and cache servers, but specifically warned that **they only use network-level traffic measurements to ensure that the traffic related to zero tariff plans can be separated from other types of traffic, and do not apply the said technology for purposes of traffic management.**

Fixed-access service providers also indicated their use of the DPI technology, but similarly to mobile operators, also not for traffic management purposes, but to operate the **KEHTA⁹ system, prescribed by the national regulations.**

As a result of the above, no further detailed examination by the Authority seems to be necessary in this issue.

2.3.1.5 The bandwidth regulation tools applied by the operators

During the inspection of the bandwidth regulation methods, the Authority tried to assess whether the internet access service providers apply measures against specific contents and/or services. The availability and nature of the measures applied allow to deduce differentiation between certain contents/services.

Based on the feedback from certain fixed-access service providers, the following conclusions can be made:

- The fixed-access service providers apply bandwidth regulation **in order to limit traffic generated by certain viruses.**
- A further special case is the **prohibition or blocking of certain ports** (e.g. SMTP 25 port, 587 port, SMPS 465 port) **to prevent spam activity.**
- There are service providers that apply bandwidth regulation to promote certain services, e.g. **proprietary contents (VoD¹⁰).**

8 Deep Packet Inspection

9 In accordance with Section 159/B (3) of Act C of 2003 on Electronic Communications, the Authority has been operating a central electronic database on the decisions on rendering data inaccessible (hereinafter referred to by Hungarian abbreviation: KEHTA) since 1 January 2014, and for the purpose of the operation it processes the data registered therein.

- **Some providers provide higher priorities for VoIP¹¹ and IPTV services, concerning the bandwidth of internet access services.** (In case of combined use of internet and IPTV services, the speed of the internet service may decrease, but the guarantees upload and download speeds will be ensured by the service provider in this case as well.)

Based on the replies of mobile service providers, the following conclusions can be made:

- For the purpose of maintaining the quality and continuous availability of their internet services, mobile service providers use technical solutions designed to ensure that customers can transfer data even in the case of temporary failure of certain component systems.
- Most providers do not apply bandwidth regulation, except the **case of reaching the data limit specified in the contract**, in which case blocking and deceleration are applied.
- A service provider indicated **bandwidth regulation applied to P2P and VPN traffic** (mostly deceleration) **in order to maintain uniformity of the network and the security of service.**
- A further special case is the **prohibition or blocking of certain TCP and UDP ports** (e.g. port 53 or ports 135-149) **in order to restrict traffic generated by viruses.** This is a special case of traffic management usually affecting only a tiny fraction of subscribers.

Based on the responses of the operators, these measures were primarily taken in the interest of network integrity and service security. The Authority does not believe that any further general investigation is needed; however, in the context of further monitoring of the applied practices and in certain issues (e.g. bandwidth management in case of VoD and own content) a detailed investigation may be justified.

2.3.2 Presentation and evaluation of NMHH's measurement results

In 2012 NMHH launched its “SZÉP”¹² project to gain an accurate picture of the real quality parameters of domestic broadband services and thereby facilitate the performance of its regulatory tasks. The project objectives expanded over time to include, for instance, facilitating conscious selection of operators and services by customers.

In 2015, NMHH deployed, as part of the project, an interactive system publishing the measurement results of certain quality indicators of internet access services and net neutrality parameters at <https://szelessav.net>.

Last year, we introduced a new software-based metering system, which, in addition to download and upload speeds and latency, can also measure jitter and packet loss. This year, **the measuring box** has been distributed to our users, **allowing measurements in the Gigabit speed measurement range.** Our plans include the introduction of a new net neutrality metering system more adapted to changing needs and user experiences, as well as the implementation of multiple gigabit metering ranges.

10 VoD: Video on Demand

11 VoIP: Voice over Internet Protocol

12 SZÉP = Szélessáv Projekt (Project Broadband)

With regards to net neutrality, NMHH mainly uses regular hardware measurements to investigate the actual quality of fixed-line internet access service using the automated measuring instruments installed at the fixed access points.

Over the past year, the NMHH performed long-term measurements (for a number of months, at hourly intervals) using measuring instruments installed at 221 measurement points of fixed access points at the following geographical locations (see figure 1), where the size of the balls indicates the order of magnitude of the specific metering point.

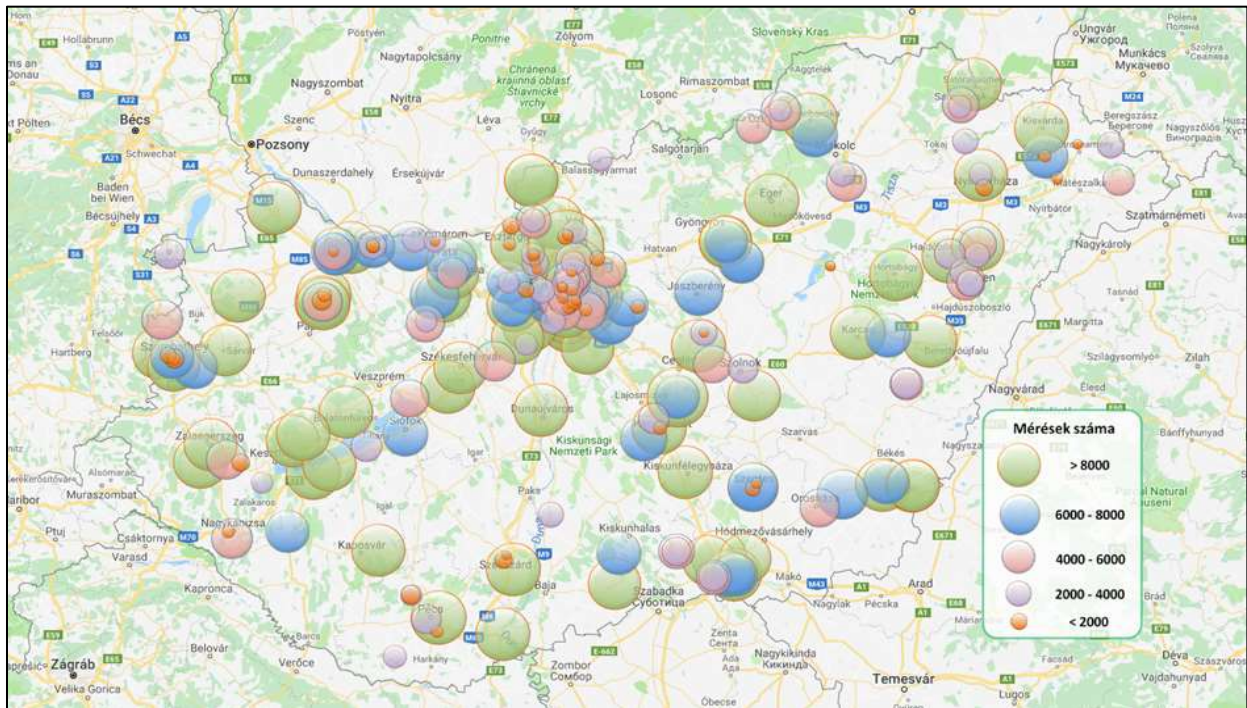


Figure 1: Spatial distribution of fixed measuring points and the number of measurements

The Electronic Communications Decree requires all internet access operators to **specify in their subscriber agreements** the quality indicators listed in the regulation such as **the offered (advertised) bandwidth as well as guaranteed download and upload speeds**.

The measurements involved 126 service plans of 41 operators. During the long-term measurements, a total of 1,314,050 measurements on a total of 55,905 days at 221 measurement locations were made.

After analyzing the results of the **measurements**, it became apparent that operators have many types of offered and guaranteed speeds in their plans, often with significant differences between plans using the same technology. Based on the comparison of the number of operators, technologies and plans with the number and distribution of the measurement points, the measurement results can not be considered representative. Taking this into account, the NMHH arrived to the following general conclusions:

- Similar to last year's report, the NMHH, based on the results of the hardware measurements, this year also modelled how the actual download and upload speeds of fixed internet access services compare against some of the possible requirements for the "normally available speed" as specified in Article 4(1)(d) of the EU Regulation. These

tests were conducted in the following categories: under 10 Mbps, between 10 and 30 Mbps, between 30 and 100 Mbps and over 100 Mbps. (Table 1)

Offered (advertised) range of download speed	Of the offered download speed								
	90% at least in the following percentage of the measurements			80% at least in the following percentage of the measurements			70% at least in the following percentage of the measurements		
	90%	80%	70%	90%	80%	70%	90%	80%	70%
Up to 10 Mbps	75.68	78.38	78.38	81.08	83.78	86.49	81.08	83.78	86.49
11–30 Mbps	72.13	77.05	80.33	77.05	85.25	86.89	85.25	86.89	86.89
31–100 Mbps	56.76	66.22	67.57	77.03	82.43	85.14	82.43	86.49	90.54
over 100 Mbps	16.36	27.27	36.36	25.45	34.55	43.64	45.45	54.55	67.27
percentage of the number of monitoring locations.									

Table 1: Percentage of meeting the offered download speed

Based on the results it can be established that a **pronounced improvement can be observed in comparison to the results from 2017 and 2018 in all download speed ranges.**

In the 0-100 Mbit/s speed ranges, it can be established that **70% of the download speed offered at the points of delivery could be achieved at the majority of the measurements performed, and the compliance ratio was even high at a rate of 80%. Naturally, due to what has been written above, these results cannot be considered representative on a national scale and for all service providers, but the providers are seemingly able to ensure the conditions of stable service provision.** In the speed category above 100 Mbps, the download speeds offered are met significantly less frequently than in the other speed categories, but the number and ratio of accesses are both significantly smaller, both in the sample and on a national scale. Besides, it must not be ignored that user requirements do not necessitate in each case the full utilisation of the speeds of such accesses, therefore lower speeds may not be felt subjectively by the user.

- **Although the performance difference between fixed internet access services during off-peak and peak periods (e.g. at night and at weekends) continued to decrease in comparison to the results in 2018, download speeds continue to fluctuate within the day. (see Figure 2)**

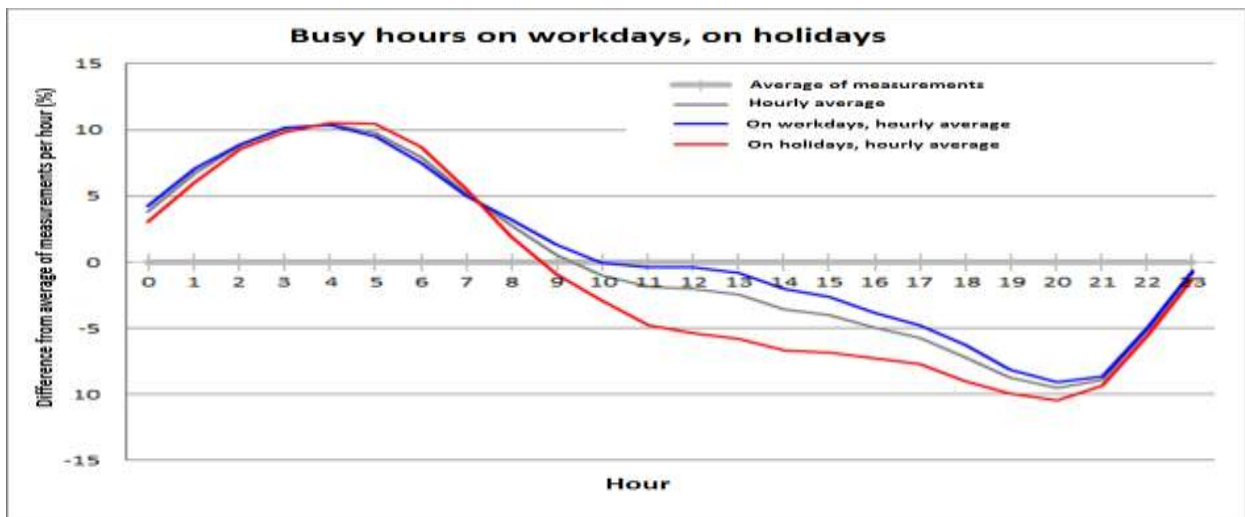


Figure 2: Daily breakdown of average download speed of fixed Internet access (based on 2018-2019 data)

➤ Figure 3 details the fulfilment ratio of the measured download speeds to those offered in a breakdown by technologies.

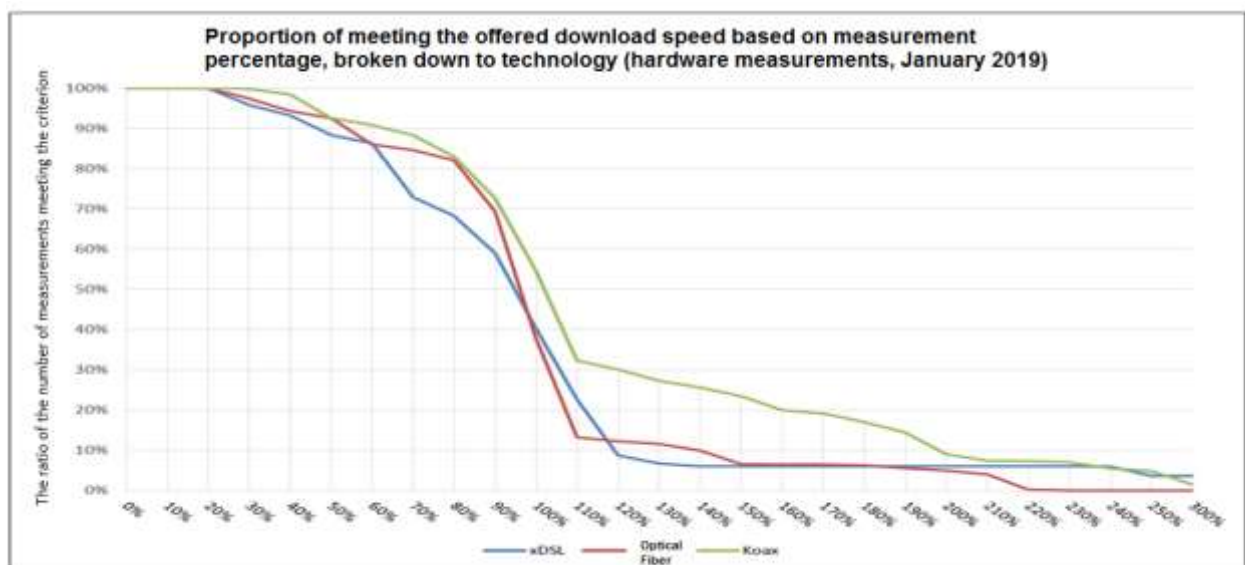


Figure 3: Download speed met by technology (January 2019)

Based on the figure, it can be established that 50% of the offered speed can be consistently achieved by the various technologies in close to 90% of the measurements, which indicates stable and balanced quality of services. Although the performance of technologies begin to differ at higher values, the only marked difference is only observed with xDSL technology. One of the reasons for this may be that there is no further development potential in the xDSL technologies used in Hungary, and that the length of the network section may significantly influence the value of the maximum attainable speed.

- Figure 4 illustrates the fulfilment ratios of the measured download speeds to those offered for fixed location measurements.

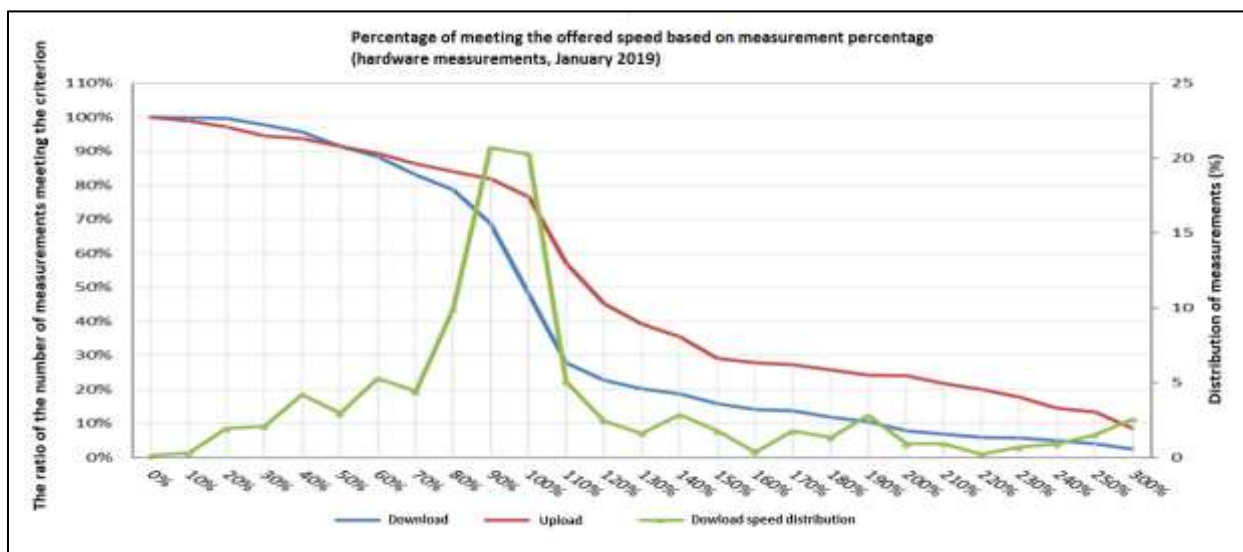


Figure 4: The rate of full speed compared to the offered speed and download speed distribution for fixed measurements (January 2019)

Based on the figure, it can be established that **80% of the download speeds offered are actually fulfilled in 80% of the measurements, therefore users meet on average stable and good quality internet service in practice.**

The above experiences are slightly overshadowed by the fact that the Authority did encounter, in some of the measurements, service provider practices that permit to assume that in some plans operators artificially limit upload and download speeds, either as part of a campaign or permanently, mostly below the maximum speed value.

Therefore, in this case the limitation is not due to network capacity but more likely to the application of some dynamic regulating tools resulting in significantly reduced fluctuations in measured speeds. **NMHH will hereinafter monitor the practice of limiting package speed from above.**

The NMHH currently uses the analyses of the above measurements of fixed services to perform monitoring of the availability of the service, information to subscribers as well the implementation of the requirements facilitating the enforcement of subscriber rights as stipulated in Article 4(1)(d)–(e) of the EU Regulation.

2.4 Special services¹³

In the reporting period, the NMHH continued checking the practical implementation of the aforementioned services and the GTCs containing the conditions of establishment of special services with the help of the data requests of the Planned activity.

¹³ Special services: services which are not internet access services and which are optimised for specific content, applications or services, or a combination thereof, where the optimisation is necessary in order to meet the requirements of the content, applications or services for a specific level of quality.

As a result of the data provision, two fixed-access service providers indicated that they offer special **VoIP and IPTV services**. The service providers **ensure a higher priority for the aforementioned services in terms of bandwidth for the internet access service**. (In case of combined use of internet and IPTV services, the speed of the internet service may decrease, but the guarantees upload and download speeds will be ensured by the service provider in this case as well.)

In case of mobile service providers, only one indicated offering an optimised service. **The service is provided under the name of VoLTE¹⁴, and according to the operator, it is not a separate “service”, but the extension of voice services**. The VoLTE service technology may be provided in case of any tariff plan/service. The filtering condition of usage is the VoLTE capability of the device used by the client. **In case of VoLTE on mobile internet access, separate differentiations are used for the signal required for call direction/registration (SIP) as well as voice/media flow (RTP), in the form of QoS classes**.

Based on the above, and for want of consumer complaints in connection with the special services, NMHH does not see justified to continue detailed investigations, but will continue tracking of the offering of special services.

2.5 Assessment of how the transparency requirements governing ISPs have been implemented

NMHH performs continuous tracking of the contractual terms and conditions of internet access services. In the course of tracking, it monitors, among others, **how operators incorporate in their contract terms and conditions and procedures the mandatory requirements stipulated in Section 4 of the Regulation, and what steps they take to enforce them**.

The purpose of this continuous assessment is to ensure that the agreements relevant to internet access services include all information relevant to subscribers in a non-ambiguous, understandable and comprehensive manner to facilitate subscribers' decision-making process.

The findings of the control will be summarised broken down to sub-chapters as follows:

2.5.1 The situation of the actual disclosure of the information mandatory to be made public, determined in the Regulation

For reasons of transparency, the Regulation considers a matter of key importance that the information be clear, transparent and understandably structured, and easily accessible. Only well informed subscribers lead to all of them selecting the optimal package, best suited to its possibilities and consumer habits. Accordingly, the service provider's practice of disclosing data plays a key role. The findings of the Authority concerning this issue are the following:

- In general, the GTCs and specific subscriber agreements of internet service providers have a wealth of **relevant information**, but they summarise the key information to subscribers in a **less user-friendly manner** in some cases, which, therefore **cannot**

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be considered as a clear, easy-to-understand explanation as required by the Regulation.

- **The factors traffic management measures applied by service providers influencing the quality of internet access service** are not discussed in detail either in the general terms and conditions or in the contracts.
- In order to facilitate the comparability of the various packages and thereby ensuring transparency related to net neutrality, the **Uniform Service Description** table required by the Authority¹⁵ **is published by each operator on its website; however, its content has not been harmonised with the provisions of the Regulation until today.**
- **With regards to the comparability of services, the operators only display their own packages on their websites, and they do not link from their own websites to any page that would allow for the comparison multiple operators' packages.**
- Although all operators know **the Authority's application szelessav.net, its link cannot be found on any operator website**, even though the app can display the measured speeds of the networks, and in the case of mobile networks, their coverage and availability.

2.5.2 The service providers' practice of applying speed values

Concerning internet access services, the speed values corresponding to the specific subscriber tariff plans can be considered one of the most important factors. This is the quality parameter that is even understandable for a layman, and is therefore comparable. Given the significance of the indicator, the Authority focused heavily on the analysis of the applied speed values in the course of its inspection. The key findings are the following:

- **Although internet access service providers include data in the contracts with respect to the target values of their services, they are not harmonised with the requirements in Article 4 (1) (d) of Regulation.**
- Each operator **lists the terms and conditions for the speed target values** in their GTCs **as stipulated in the currently effective NMHH Decree 13/2011 (XII.27.).**
- The operators **also fail to provide clear and comprehensible explanation and publish on their websites as to how speed parameters may in practice have an impact on internet access services, and in particular on the use of content, applications and services.**

2.5.3 The service providers' practice of applying other quality indicators beyond speed values

The significance of quality indicators besides speed values will greatly increase in the future as services and applications whose use requires other quality parameters besides speed (e.g. special services) grow more popular. As a consequence of this, the service providers will be forced to apply further quality indicators in order to be able to diversify their tariff plans to remain competitive.

¹⁵ Article 30 of NMHH Decree 2/2015. (III. 30.) on the Detailed Rules of Electronic Communications Subscriber Agreements includes the detailed rules for the application of the standard service description table.

The Regulation specifies 3 quality indicators (latency, jitter and packet loss), as directions of possible continued development. The Authority tried to collect information concerning whether the service providers apply further indicators, and the situation in relation to the 3 new indicators of the Regulation. The inspection produced the following result:

- It can be generally said that **no change is observable in the practice of application of quality indicators in addition to speed value by the service providers**. All of them continue to exclusively indicate the target quality value set forth by the effective national regulation in their GTCs.
- **Some fixed service providers indicated that they monitor the values of packet loss, latency and jitter** (values according to DOCSYS) **but do not disclose them**, as they consider these internal technical parameters.
- **It also occurred that a fixed service provider did not monitor continuously the aforementioned indicators, but may examine the minimum values upon individual troubleshooting, and monitors their evolution on certain backbone network devices.**
- **Two mobile service providers also monitor the evolution of the 3 new quality indicators mentioned in the Regulation in their networks.** Although the measured values are neither as yet indicated in the mandatory service description table mentioned earlier, nor the GTCs; tracking can be considered a positive development by all means, as it carries the possibility of easier introduction for the future.
- The service providers **continue to fail to provide clear and comprehensible summaries** on their websites as to how **other service quality parameters besides speed may in practice have an impact on internet access services, in particular on the use of content, applications and services.**

The experience of the survey conducted during the reporting period indicated that the GTCs of the operators are still incomplete, and do not fully include the mandatory substantive elements of the Regulation on contracts. In order to remedy the deficiencies, the NMHH will call upon the operators, in the context of an authority action, to ensure that the operators are able to perform their duties by providing clear and easily transparent information to subscribers.

2.6 Handling of complaints related to net neutrality

In accordance with point (e) of Section 4(1) of the Decree, the service providers must make legal remedies available to the consumer in the event of any continuous or regularly recurring discrepancy between the actual performance of the internet access service regarding speed or other quality of service parameters and the performance indicated in the subscriber contract.

End users can make complaints about net neutrality as per the general complaint management rules. Operators are required to have compliant and established complaint management procedures incorporated in the GTC, thus they are available to subscribers.

Under national legislation currently in force, the operator is required to respond on the merits of the written complaint within 30 days from the date the complaint is received.

The operator's practice and intervention relevant to net neutrality may be detected by end users also in the form of a network error or quality of service. Troubleshooting is governed by separate rules other than complaint handling. Thus, the operator is required to investigate the fault report within 48 hours. In addition, a confirmation message about the receipt of the fault report has to be sent to the subscriber and the issue must be registered. The period from reporting the fault to its correction shall not exceed 72 hours. Immediately but within 24 hours after resolving the fault, the Operator shall notify the subscriber about the fault resolution, and register the means and time of notification.

Thus, the subscriber can report the issue (including the complaint resulting from the error referenced above) to the operator, which then investigates the issue. If the subscriber does not agree with the response received or he believes the operator does not perform as per the subscriber agreement, the subscriber may submit his case to a court as per the dispute resolution procedure specified in the agreement, or, in the case of subscribers who qualify as consumers, can seek assistance from an arbitration board. Should the operator fail to investigate the complaint or violates the laws pertaining to subscriber legal relationship, the party filing the complaint may submit his case to NMHH.

2.6.1 Complaints received by the service providers

The above obligation, i.e. that the service provider include the rules of legal remedy in the GTCs, is fulfilled by all service providers, therefore it can be stated that the possibility of legal remedy is available to the subscribers.

At the same time, the Authority also intended to assess the practical operation of the possibility of legal remedy, based on the number and method of handling of subscriber complaints received by the service providers.

However, based on the service providers' replies, the only conclusion to draw is that the practice of managing the complaints related to net neutrality cannot be established, as none of the service providers categorise and collect separately the net neutrality-related complaints.

2.6.2 Complaints submitted to NMHH

As explained in the introductory text above, complaints regarding net neutrality may only be sent to the Authority if the service provider fails to investigate the complaint in question, or breaches the legal regulation governing the subscriber legal relation. Given that during the period under review, the NMHH did not receive any complaints or application from end-users against fixed or mobile operators regarding violations of the net neutrality rules of the EU Regulation, it can be stated that **there is no systemic problem with respect to net neutrality and the effective regulation can cope with the issues encountered.**

2.7 Other NMHH activities related to net neutrality

NMHH has also conducted some other activities related to net neutrality and not listed in the BEREC guidelines, which complements and makes more complete NMHH's monitoring activity.

NMHH collected the results of the annual market research on net neutrality conducted among subscribers and users, and also had a research conducted on the opinion of the general public on net neutrality.

2.7.1 Results of NMHH's earlier annual market research relevant to net neutrality

Each year NMHH prepares a large-sample survey of national representation on Hungarian internet use among internet users living in Hungary and aged 16 and older. The research uses an online form and involves 3,000 respondents.¹⁶

Results of the 2018 internet survey relevant to net neutrality:

- **Similarly to the results of the market research conducted in 2017, the opinion of the vast majority of Hungarian internet users has not changed in that the internet should be free and without any restrictions, open to all by default and with equal opportunities.**
- When concluding an internet subscription agreement, still only a small fraction of subscribers are sufficiently patient or motivated to thoroughly study the individual subscriber agreement and the relevant parts of the GTC.

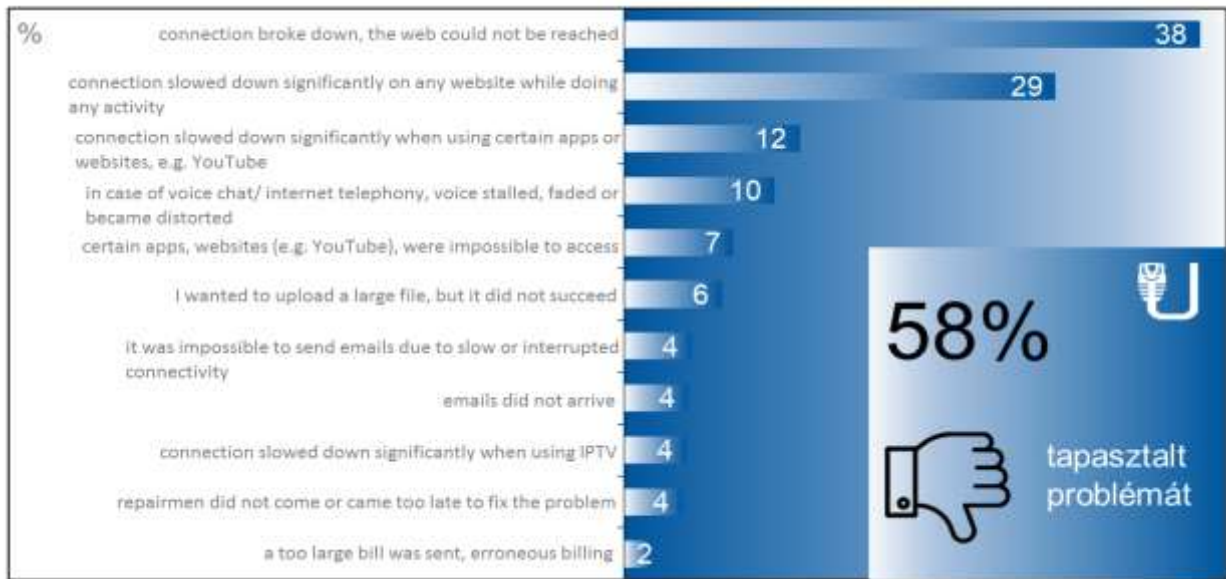
At the same time, **nearly one-quarter of internet subscribers have already attempted to find some information that they were interested in either in the GTC or in the specific subscriber agreement, and even though they were mostly able to find them (84-86%), in nearly half the cases it did cause them trouble.**

It follows from this that the transparency of the contracts should be increased by the service providers.

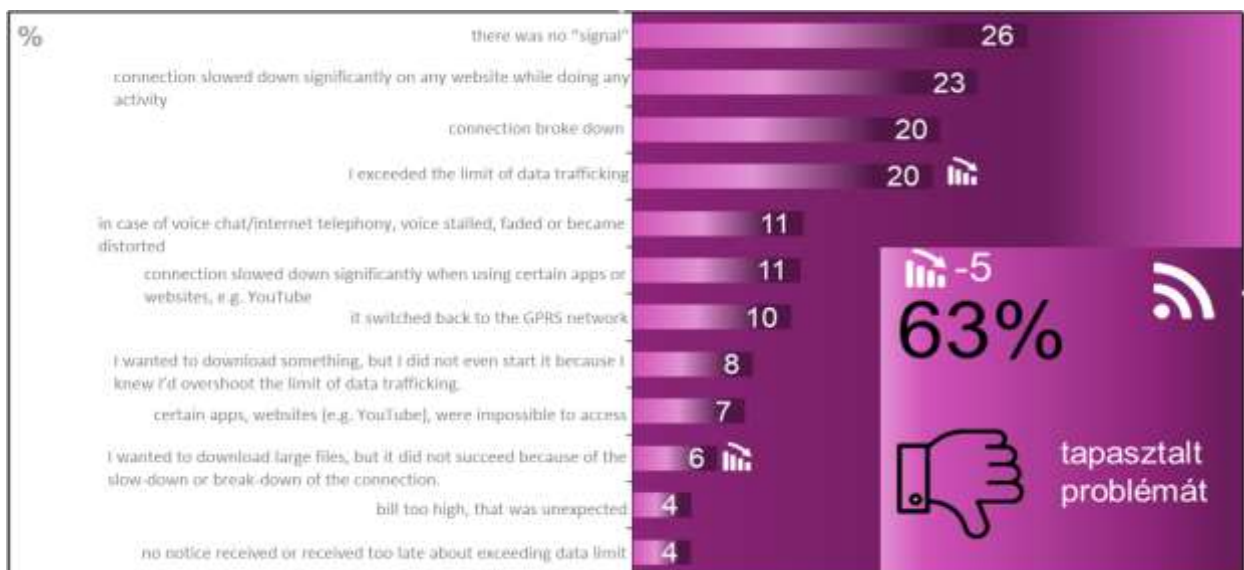
- In 2018, 58% of fixed internet subscribers encountered some kind of problem with their subscriptions. The most common problem continues to be broken connectivity, followed by very slow connection speed. **The types of problems and their occurrence frequencies are by orders of magnitude identical to the results of the 2017 market research.**

16 NMHH research, Residential internet use, 2018.:

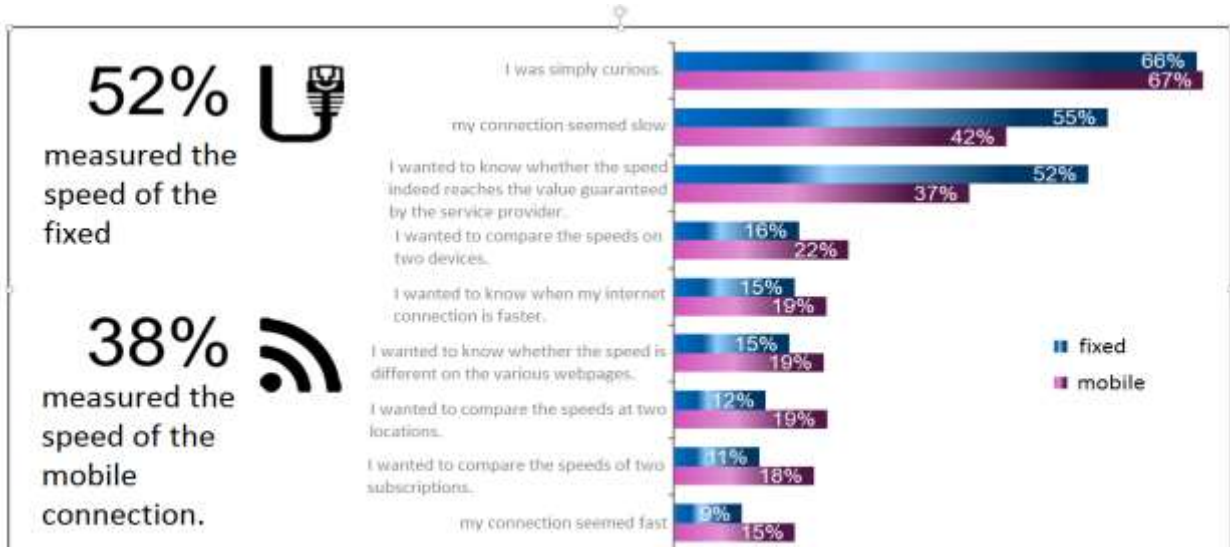
http://nmhh.hu/dokumentum/202180/lakossagi_internethasznalat_2018.pdf



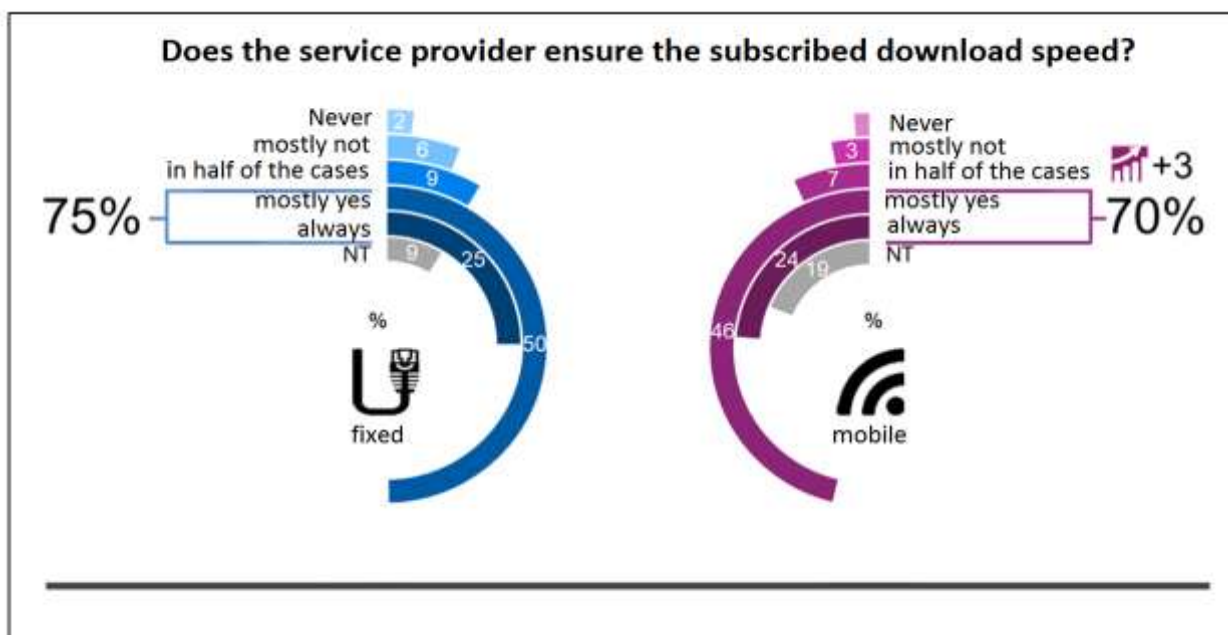
- Since 2017, the number of mobile internet subscribers experiencing problems decreased by 5%. The improvement is observable in the occurrence of all fault phenomena, and the reliability of the mobile system continuously approaches that of fixed access systems. This trend may help achieve full interchangeability of the systems on the medium term.



- The ratio of those who measured the speed of their internet connection on purpose-built websites has not changed since 2017. Reasons for measurements conducted with specific purposes have been given by respondents as slow internet connections and control of promises of service providers.



- Over the years, from the perspective of download speed, the ratio of mobile internet clients satisfied with their service providers has significantly approached the ratio of clients satisfied with their fixed access service providers (75%). This result also shows the evolution trend of the interchangeability of mobile and fixed systems.



- In 2018, the ratio of users of social media and in parallel, chat has increased significantly, which also showed in the increase of the number of¹⁷ subscribers of zero tariff plans. (In 2018, 21% of subscribers possessed zero tariff plans, in comparison to 14% in 2017). Zero tariff plans are primarily attractive to young people.

¹⁷ In case of zero tariff plans, the services of certain players of social media or certain applications are not included by the service provider in the quota

2.7.2 Results of the¹⁸ Social Listening research

The NMHH continued its Social Listening research on net neutrality prepared for the previous reporting period, this time examining the period between 1 May 2018 and 30 April 2019. The main findings of the research are as follows:

- **Net neutrality in comparison to the previous year activated users to a lesser extent, the number of mentions decreasing by more than half**, despite notable websites and media having communicated news in the topic.
- **The outstanding number of mentions of the examined period of 2017-18 was generated by the news concerning American net neutrality.** Based on the international benchmark data examined, interest for the topic one year later significantly decreased not only in Hungary, but in other countries as well.
- The low activity of users in the topic caused further increase of the neutral contents – **emotionally charged comments** have only been written in small numbers, concerning events related to **American net neutrality and the zero tariff plans of the domestic service providers.**
- In the examined period, **similarly to the experiences of the recent years, numbers of mentions in connection with NMHH were also small (~5%),** containing steps of the authority aimed at protecting principles of neutrality in a neutral and factual context.
- **Regarding standpoints concerning net neutrality, no significant change has taken place in comparison to the previous years. Opinions in support of unlimited access to specific contents by ignoring net neutrality continue to be strongly present.**
- **Violation of net neutrality may be detrimental to consumers on the long run, but most users only consider short term advantages** when using the services concerned. **The NMHH may play a key role in changing this,** which may, based on the recommendations prepared for the research, **be able to bring about a paradigm shift by reaching out to a broader spectrum of consumers and through their intensified information and education** (even with the help of an “influencer” campaign if need be).

¹⁸ Social Listening is a procedure that identifies, collects, analyses and evaluates what has been published in the specific topic on the internet.

3 SUMMARY OF THE SITUATION OF OPEN INTERNET IN HUNGARY FOR THE REPORTING PERIOD

The internet has become one of the most important infrastructures of society and the economy and its key role is unquestionable in virtually all segments of our lives. **Most EU Member States consider it a priority issue to avoid exclusive control over content and services transferred over the network due to ownership over the network infrastructure because that would be in violation of the principle of free information flow and provision of services.**

The monitoring, measurement and legal tools of the NMHH are available and appropriate for examining and monitoring the deviations from the provisions of the EU Regulation, and in the event of any discrepancies detected, to take the necessary actions and eliminate the infringements.

During the reporting period, the NMHH continued its monitoring efforts to study the availability of non-discriminatory internet access services. Key experiences gained from the inspections have been summarised in the following:

- **An intense competition can be observed on the internet access market.** The market is characterised by several new services tailored to the continuously changing consumer needs, and new, sophisticated measures applied by the service providers.
- **No systemic faults can be observed concerning net neutrality.** The number of consumer complaints brought to the knowledge of the Authority is marginal, the experiences of subscribers in connection with the quality of service have shifted in a positive direction, the market is characterised by services of improving quality.
- **However, the official inspection revealed deficiencies in a number of cases** (e.g. the full transfer of the obligatory content elements of the contract into the subscriber contracts, as specified by the EU Decree), **that entail official measures, or application of service provider's practices was brought to the knowledge of the Authority, the clarification of which necessitates further detailed examination.**
- Another lesson learned about the realization of the open internet, which the measurement results also underlined, **is that operators can, in many cases, manage the available speeds to significantly influence the current quality of the service and thus consumer experience without using obviously prohibited traffic management tools.**
- The social listening research has revealed that **although consumer conscience in connection with net neutrality has increase over the recent years, there continues to be a pronounced need for consumer education, in which NMHH is capable of producing material results, based on the knowledge and experience accumulated.**