



NMHH

Nemzeti Média- és Hírközlési Hatóság

# THE STATE OF OPEN INTERNET IN HUNGARY IN 2021

Annual report on net neutrality  
for the period  
1 May 2020 to 30 April 2021

30 June 2021



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## 1 HUNGARIAN REGULATIONS ON THE OPEN INTERNET

The substantive content of the EU regulatory framework on open internet access became common knowledge and was included in Hungarian legislation as net neutrality during the debates before its creation. This report also uses the term ‘net neutrality’ as a reference to rules on the open internet in several cases, without the intention of explicitly differentiating between the two.

The regulation of open internet access in Hungary consists of a number of components: Although the EU regulatory framework has not changed, the transposition of the European Electronic Communications Code (hereinafter referred to as: the **Code**) led to significant changes in the complementary national regulations during the reporting period:

1. As Hungary is an EU Member State, *Regulation (EU) 2015/2120* (hereinafter: **EU Regulation**) *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* is directly effective and applicable.
2. Besides the EU Regulation, a piece of national legislation, *NMHH Decree 2/2015 (III.30) on the detailed rules of electronic communications subscriber contracts* (hereinafter: **old Electronic Communications Decree**) has contained provisions on the open internet since it entered into force, in the interests of ensuring transparency. The transposition of the Code is governed by *NMHH Decree 22/2020 (XII.21) on the detailed rules of electronic communications subscriber contracts* (hereinafter: **new Electronic Communications Decree**), in force from 21 December 2020, but electronic communications operators have been given until 30 June 2021 to adapt their general terms and conditions as well as existing subscriber contracts to the new regulations. Thus the practical effects of applying the new Electronic Communications Decree will only be felt in the next reporting period.  
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 individual subscriber contracts.
3. An additional piece of national legislation is *NMHH Decree 13/2011 (XII.27) on the requirements for the quality of electronic communications services in relation to protecting subscribers and users, and on the authenticity of billing* (hereinafter: **Quality of Service Decree**), which requires all fixed and mobile internet access providers to specify certain quality indicators guaranteed by the operator. Due to the transposition of the rules of the Code and the need for consistency with the European regulatory framework for open internet access, the Quality of Service

Decree has also been amended in a number of places, which will be discussed in more detail in section 2.5 of the report.

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

## 2 MONITORING THE IMPLEMENTATION OF THE EU REGULATION

Internet use and the internet-based digital economy have become decisive factors in our lives. This is why the National Media and Infocommunications Authority (hereinafter: **NMHH** or **Authority**) monitors and controls the development of the open internet in Hungary as well as compliance with the relevant rules as a matter of priority. The NMHH performs these activities as listed under the supervisory powers stipulated in Act C of 2003 on Electronic Communications (hereinafter: **Electronic Communications Act**).

By means of its supervisory authority, the NMHH checks operators' compliance with net neutrality rules during its scheduled annual inspections, and in justified cases, its unscheduled inspections. In addition, the NMHH will also take action if subscribers of electronic communications services submit requests or complaints, or if operators submit complaints.

To summarise its tracking activity, the NMHH prepares an annual report in accordance with the provisions of the EU Regulation, with the content outlined in the BEREC Guidelines<sup>1</sup>. The NMHH complies with its obligations under the EU Regulation by preparing, and publishing the report, and sending it to the Commission and the BEREC.

Just like in last year's reporting period, the Authority continued to track the practical implementation of the EU Regulation's requirements in this year's reporting period. For the purpose of monitoring market processes it checked the websites and advertisements of the operators, looking at the prevalence of open internet access it conducted random inspections of the General Terms and Conditions as amended (hereinafter referred to as: **GTC**) of the mobile and fixed internet access providers with the largest number of subscribers, and it acted upon any specific cases it became aware of.

In addition to the monitoring tasks of previous years, in 2020 the Authority also performed legislative tasks, as a result of which the Hungarian regulation is now fully aligned with EU provisions. The previous inspections revealed no outstanding problems, so no comprehensive market supervision inspection was justified; the Authority plans to launch such in the future within the context of implementing the recently amended legislation.

The results of the Authority's monitoring activity are summarised in the chapters below.

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<sup>1</sup> BoR (16) 127 BEREC Guidelines on the Implementation by National Regulators of European Net Neutrality Rules

## 2.1 Contractual and commercial conditions

The NMHH inspected the net neutrality aspects of contractual and commercial terms primarily in terms of the zero-rating plans most favoured by mobile operators as well as plans with unlimited data quotas. The common feature of the zero-rating plans was that the data traffic generated by accessing services and content specified by the operator does not reduce the data quota of the mobile internet subscription.

### 2.1.1 Initial zero-rating plans

With the first zero-rating plans, after using the amount of data included in the quota, the services available with zero-rating plans remained available to subscribers under the original terms. The NMHH initiated several procedures in this regard, and concluded that the commercial practices investigated qualified as prohibited discriminatory traffic management measures, and as such violate the rules on net neutrality. Accordingly, the NMHH banned such unlawful behaviour and ordered operators to stop making an unlawful differentiation between various types of internet traffic.

**Two such cases ended up in court, in which the Hungarian court referred to the Court of Justice of the European Union for a preliminary ruling on the interpretation of Article 3 of the EU Regulation.**

On 15 September 2020 the Court of Justice of the European Union ruled in the preliminary ruling procedure.

The Court adopted a **reference decision** by sharing the legal interpretation of the NMHH, ruling that **if operators provide an unlimited data quota for the use of certain applications and services and provide unrestricted access to these services and applications, while other internet content is no longer available, or access thereto is slowed down because the contracted data volume has been used up, this does not comply with net neutrality requirements.**

**According to the European Court of Justice, plans combining zero rating with measures that block or slow down traffic to other, non-zero-rated services and applications may result in a restriction of consumers' rights.** This is because it increases the use of the featured applications and services while reducing the use of other applications, as the measures implemented by the operator make their use technically difficult or impossible. At the same time, the open internet rules protect the rights of all users of the internet, including content providers (such as social media and music site operators, developers of various applications) and end users.

**The Budapest Regional Court subsequently delivered its rulings in the case as well, rejecting the applications submitted by the internet access provider concerned.**

According to the Regional Court's ruling, blocking or slowing down non-featured applications violates the prohibition of traffic discrimination if they are based on business considerations and not on the technical grounds listed in the EU Regulation. Furthermore, in the case of unlawful discriminatory practices, there is no need to examine the impact on end-user rights separately.

**One of the two plans concerned is no longer sold by the operator (MyChat), while in the case of the other plan (MyMusic) the operator has changed the terms of use, and the terms are already in line with net neutrality rules. Thus following the completion of the appeal procedure, the Authority did not have to take action to implement decisions which are now final.**

### **2.1.2 Modified zero-rating plans**

The operators introduced new types of thematic zero-rating plans to 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 data quota ran out. Once the user exceeded the quota, the thematic content, just like any other content or application not listed in the zero-rating plan, was slowed down or restricted.

**The NMHH inspected these plans on an ad-hoc basis when the plans were introduced, in the course of a regulatory investigation, and since the Authority did not reveal any circumstance substantiating the application of negative discrimination by the operators with respect to specific content, services or applications, or their specific categories, it closed the investigations. The Authority did not initiate any proceedings in relation to such plans in 2020.**

### **2.1.3 Unlimited plans**

Besides the zero-rating plans, the NMHH launched an investigation into an offer that differed from the above in that it provides an unlimited data quota in Hungary, meaning it is no longer significant that some applications and content are not included in the plan's data quota.

#### **Telekom "Net Korlátlan" (Net Unlimited) plan:**

The operator launched its "Net Korlátlan" tariff plan for subscribers in 2017. In addition to unlimited internet use in Hungary, the plan also provided 15GB of data for use in the EU. The "Net Korlátlan" plan was only available for personal use, and the SIM card associated with the tariff plan could only be inserted into mobile phones. (Pursuant to the contractual terms and conditions, it constitutes a breach of contract if the SIM card is used by the subscriber in a device not suitable for making mobile voice calls).

Furthermore, for the purpose of maintaining network integrity and service security, the operator reduced the mobile internet speed of certain types of traffic (P2P<sup>2</sup>, VPN<sup>3</sup>) and modes of use (Bittorent) significantly compared to the speed offered by the plan, i.e. it applied limitations.

Although the operator has now stopped selling the aforementioned plan, **a new plan called “Unlimited Net” was launched with the same conditions** thereafter, while continuing to offer the old tariff plan with unaltered conditions to those who had already signed up to it. **NMHH inspected the old and new tariff plans in a joint regulatory procedure.**

In the course of the procedure, the NMHH found that by consistently applying traffic management measures in relation to P2P and VPN traffic, the operator failed to comply with Article 3 (3) of the EU Regulation; furthermore, by imposing restrictions on the type of terminal equipment utilised by the subscribers, it failed to comply with Article 3 (1) of the EU Regulation; and by reserving the right to unilaterally amend the range of traffic management measures at any time, it failed to comply with Article 3 (3) of the EU Regulation.

**The NMHH ordered the operator to amend its practices and the relevant items of its GTC within 30 days by applying traffic management measures only at the time, and for the period, when the conditions stipulated in Article 3 (3) of the EU Regulation are met, to allow subscribers to insert their SIM card into a terminal device of their choosing, and to remove the clause according to which it reserves the right to unilaterally amend the range of applied traffic management measures at any time.**

**The operator lodged an appeal against the decision.** From the list of prescribed obligations, in its appeal, the operator only contested the obligation pertaining to P2P traffic management.

**According to the ruling of the second-instance authority, the NMHH established the infringement in a correct and well-founded way and only amended the resolution of the first instance with regard to the deadline for complying with its obligation, setting a time of 90 days instead of the 30 days originally imposed by the NMHH.**

**The NMHH examined the implementation of the first instance decision as part of a follow-up inspection. Based on the relevant provisions of the GTC and the statement of the operator, the Authority established that the operator had implemented the obligation set out in the first instance decision.**

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<sup>2</sup> P2P: Peer-to-peer traffic: traffic in which endpoints of the IT network communicate with each other directly, without a dedicated central node.

<sup>3</sup> VPN: Virtual Private Network: enables users to send or receive data on a shared or public network as if their computers were connected directly to the local network.

#### 2.1.4 Temporary commercial offers

Hungarian mobile operators, Magyar Telekom Nyrt., Telenor Zrt. and Vodafone Zrt. introduced temporary zero-rating offers at the request of the government for the period of the COVID-19 state of emergency.

The main goal with introducing these offers was to allow access to digital remote education to everybody during the lockdown of educational institutions and during the period of digital education in such a way that any differences originating from social inequalities would not affect the effectiveness of the education. Operators complemented the free accessibility of the educational content specified by the government with free data quotas for both pre-paid users and subscribers.

Once the state of emergency was terminated, all of the operators ended their temporary offers on 1 July 2020.

## 2.2 Restricting end-user rights

The NMHH monitors restrictions on end-user rights as a matter of priority. The Hungarian regulation provides legislative guarantees (Electronic Communications Act) for the rights of subscribers and other end users, while the Electronic Communications Decree specifies the compulsory content elements of subscriber contracts.

**In recent years, the NMHH has monitored compliance with the rules on end user rights pertaining to net neutrality mainly by checking the terms and conditions in the operators' GTCs and the data requested from the operators. During the reporting period, besides checking the GTCs on a test basis, the Authority mainly concentrated on monitoring and on the individual cases revealed.**

### 2.2.1 Restricting use of subscriber terminal equipment

During the reporting period, the NMHH inspected the practice of internet access providers regarding subscriber terminal equipment, mainly by reviewing the GTCs, in particular the conditions for connecting subscriber terminal equipment that was not provided by the operator.

Given that based on Preamble 5 of the EU Regulation 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 the terminal equipment, any limitation imposed by the operator is inconsistent with the requirements of the EU Regulation.

**In relation to fixed internet access services, the investigations did not reveal any restriction by the operators that would expressly prohibit subscribers from using their freely chosen devices, but in case of mobile internet access services, the Authority identified several cases where operators restricted the scope of terminal equipment that could be chosen by subscribers.**



➤ **Telekom “Net Korlátlan” (Net Unlimited) plan:**

In its procedure, the Authority found that according to the GTC of the operator the “Net Korlátlan” plan was only available for personal use, and the SIM card associated with the tariff plan could only be inserted into mobile phones. The details can be found in Chapter 2.1.3.

➤ **“Telenor XS”, “Telenor S” and “Hiper” tariff plans:**

The Authority’s investigation revealed that the operator’s GTC, in the case of the “Telenor XS”, “Telenor S” and “Hiper” tariff plans, specified the types of devices the SIM card could be used with, and furthermore, it stipulated that the tariff plans could not be used for machine-to-machine communication (e.g. remote monitoring), thus placing limitations on the free use of the tariff plans.

For the above-mentioned reasons, the NMHH conducted a regulatory investigation into the compliance of the “Telenor XS”, “Telenor S” and “Hiper” tariff plans with net neutrality rules, during which **it established that by restricting the scope of terminal equipment utilised by subscribers, the operator failed to comply with the provisions of Article 3 (1) of the EU Regulation, and by stipulating in Section 1.1 of Annex 1/A to the GTC that the tariff plans cannot be used for machine-to-machine communication (e.g. remote monitoring), it failed to comply with the provisions of Article 3 (1) and (3) of the EU Regulation.**

**The Authority called upon the operator to amend its procedures** by allowing “Telenor XS”, “Telenor S” and “Hiper” tariff plan subscribers to insert the SIM card into freely chosen terminal equipment, and to delete the condition from the GTC that “The tariff plans cannot be used for machine-to-machine communication (e.g. remote monitoring)”.

Pursuant to this notice, the operator amended certain provisions of its GTC by stipulating only the type of device the SIM card can be inserted into for the voice call and messaging services of the tariff plan, instead of the whole tariff service.

**Following the amendment of the GTCs, the NMHH closed the investigation.**

**In connection with the use of subscriber terminal equipment we still have not found any serious cases related to fixed-line services. The Authority will continue to monitor the enforcement of the free choice of terminal equipment in both mobile and fixed services.**

### 2.2.2 Prohibition of tethering<sup>4</sup>

Closely related to the previous point examining free use of terminal equipment, the NMHH saw fit to closely monitor whether operators limit internet sharing per se or by restricting the right to choose terminal equipment.

**After reviewing relevant GTCs, the Authority determined that they do not contain any express prohibition of tethering, and based on the information available on their websites, the operators have no tariff plans that would prohibit the connection of a device without internet access to another device with access.**

However, some operator GTCs still include a section providing that the datalink and the amount of data downloaded may not jeopardise the proper functioning of their network, and that operators may take preventive or corrective measures resulting in slower or restricted traffic to prevent network overloads or network crashes, or to provide services to other subscribers.

**For the reasons above, the NMHH does not plan a comprehensive investigation related to tethering, but it will continue to monitor the implementation of the aforementioned preventive or corrective measures resulting in reduced traffic speed or limited traffic.**

### 2.2.3 Other end-user restrictions

In addition to the restrictions on end users mentioned above, examining the operator's GTC the NMHH found a clause in the contractual terms of one of the mobile operators that restricted subscribers to using the service only at the installation address. As the restriction was suspected of infringing net neutrality rules, the Authority contacted the operator to clarify the situation.

#### ➤ Telenor “Hipernet Home” plan

One of the tariff plans of Telenor Zrt. was suspected of infringing net neutrality rules because in the terms of the “Hipernet Home” tariff plan the operator stipulated that if the subscriber uses the service at a different location than the installation address, the operator is entitled to limit the speed of access to the service.

According to net neutrality rules, the location of the end user or service must not affect the end users' ability to access the content of their choice through their internet access service.<sup>5</sup> As the operator's condition was suspected of violating the provisions of the EU

<sup>4</sup> Tethering: connection of a device without internet access to another device with an internet connection (e.g. mobile phone or tablet), and sharing internet access this way.

<sup>5</sup> Article 3 (1) of the EU Regulation: “End users shall have the right to access and distribute information and content, use and provide applications and services, and use terminal equipment of their choice, irrespective

Regulation, the Authority asked for clarification of the issue.

The operator declared that the sale of the tariff plan in question had been discontinued in the meantime, so it was no longer possible to conclude a new subscriber contract for that plan. The terms of the newer “Hipernet Home+” tariff plans, amended in the meantime, no longer included the objected contractual term.

However, since the “Hipernet Home” tariff plan still had subscribers on the old terms, **the Authority notified the operator informally, as a result of which the operator cooperated, deleted the objected term from its GTC, and notified the affected subscribers of its change.**

## 2.3 Performance of internet access service

The NMHH used a number of different methods to assess the parameters of the internet access services offered by internet service providers. Given that the previous years’ comprehensive inspections did not reveal significant and general irregularities, **the Authority focused on monitoring in this reporting period as well, complemented by investigating complaints received from consumers. Additionally, in its broadband measurement system, the NMHH used the results of the measurements initiated by subscribers** to investigate whether the actual service quality experienced by subscribers corresponds with the speeds listed in the offers of operators.

### 2.3.1 Traffic management tools employed

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

A pivotal point of enforcing the right granted by the EU Regulation is how the traffic management practices of the operators adhere to the regulation, whether the “reasonable measures” permitted by the EU Regulation are applied, and whether the actual measures meet the conditions mentioned in the regulation<sup>6</sup>.

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

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of the end-user’s or provider’s location or the location, origin or destination of the information, content, application or service, via their internet access service.”

<sup>6</sup> The conditions are listed in the second subparagraph of Article 3 (3) of the EU Regulation. Reasonable measures must be: transparent, proportionate, non-discriminatory, shall not monitor the specific content and shall not be maintained for longer than necessary.

### 2.3.1.1 Different levels of priority in data traffic

In connection with the traffic management measures, the NMHH first examined on a test basis the possible application by operators of priority levels in the GTCs. The objective was to clarify whether the operator applies any discrimination among users during access to various services, applications or content, and if so, what is the objective reason for this.

The GTCs of **fixed-line operators** confirmed the results of previous years' surveys, according to which **priority levels are not necessarily required to manage congestion in well-dimensioned networks**. Accordingly, the GTCs do not contain parts referring to prioritisation, presumably because the quality commitment offered to subscribers can be adhered to even without this.

Mobile operators used different practices in relation to applying priority levels based on investigations in previous years. **Some of them did not apply priority levels at all; others only applied them to mobile services substituting for fixed-access services** (to protect the mobile network, protecting the system from wired data usage entailing greater volumes of data) while **other operators classified subscribers of a particular service into a lower priority level when the network became overloaded (congested)**.

**Traffic management measures taken in relation to the latter cannot be regarded as reasonable traffic management measures due to the element of discrimination.** At the same time, since these discriminations are **applied by the given operator in situations with a risk of network congestion, they may qualify as other measures beyond reasonable traffic management measures**, provided the operator adheres to the principle of temporariness and proportionality, as specified in the EU Regulation.

**The Authority investigates and evaluates these cases individually when it becomes aware of them.**

**Although the prioritisation applied by operators did not violate the provisions of the EU Regulation, the Authority shall continue monitoring it in the future.**

### 2.3.1.2 Management of traffic congestion

In the case of traffic congestion, given that operators are entitled to take other measures temporarily, besides reasonable traffic management measures, the NMHH specifically looked at operators' congestion management practices.

In recent years, the Authority carried out extensive inspections regarding the traffic congestion practices of operators on several occasions. Several of these inspections ended with the same result, namely:

- **the operators do not use any preventive or restrictive measures in the event of actual or potential traffic congestion** in subscriber traffic;

- **they design their networks to be congestion-free**, continuously monitor them, and **only intervene if necessary** to mitigate the situation;
- **none of the operators had any protocol regarding the duration of traffic management measures** that would regulate this issue in detail.

**Although the Authority did not carry out a comprehensive inspection in the current reporting period because of previous years' experiences, the proper operation of the networks has been justified by the operators' practices during the state of emergency related to the COVID-19 virus.**

Similar to the authorities in other EU Member States, the NMHH ordered internet access providers to provide regular information so the Authority could monitor internet traffic during the state of emergency and see if there is any congestion when providing services. **According to the answers received, none of the operators reported congestion, although internet traffic increased significantly (by almost 30%) at the beginning of this period (March-May 2020).**

This is due partly to the fact that many of them responded to the situation by increasing their capacity rather than reducing the quality of service, and partly to the fact that their networks were appropriately scaled for the expected traffic and were able to ensure the smooth operation of the service by taking advantage of reserves. That the procedures adopted by the operators are appropriate is also supported by the fact that the Authority did not receive any complaints during the same period on the grounds of congestion.

The initial rise in traffic growth was followed by a period of stagnation in the summer, then by a gradual decline in traffic at the beginning of the autumn. The operators were well prepared for the second and third waves of COVID, so internet traffic was smooth even during these periods as well.

**Although the traffic congestion management practice of operators did not violate the provisions of the EU Regulation, the Authority shall continue to monitor it in the future.**

### **2.3.1.3 Application-independent traffic management tools**

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

**The Authority's inspections in previous years did not reveal "other" independent traffic management measures applied by the operators, and given that the Authority did not become aware of any of such practices this time, initiating a regulatory procedure was not necessary.**

**Based on the information found in GTCs, the operators do not violate the provisions of the EU Regulation, therefore, an extensive inspection by the Authority is not necessary, but occasional checks might be reasonable.**

#### **2.3.1.4 Application-dependent traffic management tools**

Application-dependent traffic management tools and technological solutions like DPI<sup>7</sup> can detect specific content, applications or services within the data traffic investigated, so they may be particularly suitable for interventions by the operator violating open internet access.

The detailed inspections of previous years did not reveal any significant problems, so during this year's reporting period the Authority mainly concentrated on monitoring and investigating any incoming notifications.

**Given that the Authority did not find any problematic cases with this regulatory activity, it does not consider further detailed investigation necessary in this regard, and will continue to focus on monitoring.**

#### **2.3.1.5 Bandwidth regulation tools applied by operators**

By inspecting the bandwidth regulation methods, the Authority wanted to assess whether the internet access providers apply measures against specific content and/or services. This is because the availability and nature of the measures applied allow us to infer differentiation between certain content/services.

**Detailed surveys in previous years made it clear that most of the operators apply bandwidth regulation, but do so in order to protect network uniformity and service security** (e.g. limiting traffic generated by viruses, preventing spam activity, etc.). In addition, mobile operators use blocking and slowdown measures if the data limit specified in the contract is reached.

Since the mentioned measures of the operators do not violate the provisions of the EU Regulation, the Authority did not carry out any further general inspection in this year's reporting period, but initiated a regulatory procedure in relation to one specific case:

➤ **DIGI<sup>8</sup> – blocking port 445:**

In November 2020, the subscriber noticed that he could not remotely access the files stored and shared on his home computer. An investigation of the error by the subscriber revealed that the SMB protocol providing file access was blocked by the internet access provider by closing incoming connections to UDP and TCP ports 445. The subscriber

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<sup>7</sup> DPI: Deep Packet Inspection

<sup>8</sup> DIGI Távközlési és Szolgáltató Kft. (hereinafter: DIGI)

reported the restriction as a technical error to the operator by telephone. In its reply, DIGI admitted that it was blocking incoming traffic to port 445 on purpose, citing network security interests, and indicated that it did not intend to unblock it. The subscriber considered DIGI's act to be an infringement and therefore submitted a request to the Authority in January 2021.

According to a statement made by DIGI during the regulatory procedure, on 14 November 2020 they received a blackmail email with a DDoS threat, which roughly coincided with a demonstration attack on the customer server infrastructure at a load of more than 100 Gbps. DIGI countered much of this using network border protection measures, but the attackers still managed to deliver a certain amount of packets to the target, making some services temporarily unavailable. As the threat proved to be real, DIGI introduced port 445 filtering to prevent the infection of additional endpoints and network devices and control of the "zombie" devices through infection, as well as attacks against DIGI's own infrastructure from its own network. To the Authority's question about how long it intended to maintain the blocking, DIGI replied that if Microsoft significantly improved the security of the SMB protocol and removed its proposal on blocking port 445 from its own recommendations, DIGI would reconsider removing the filter.

In the course of the procedure, the Authority will examine whether **the exception laid down in Article 3(3)(b) of the TSM Regulation applied, i.e. whether the application of other traffic management measures beyond reasonable traffic management measures is justified in order to preserve the integrity and security of the network, with regard to the network, the services provided via that network, and the terminal equipment of end users. In addition, in the course of the procedure the Authority will assess whether DIGI has applied the security measure only to the extent and for the time necessary to comply with the exception.**

The proceedings are currently pending and no decision has yet been made.

**The Authority does not see any further comprehensive inspection justified, but the further monitoring of practices applied by operators as well as a detailed investigation of individual cases when necessary are recommended.**

### 2.3.2 Presentation and evaluation of NMHH's measurement results

In 2012, NMHH launched its "SZÉP"<sup>9</sup> project to gain an accurate picture of the real quality parameters of Hungarian broadband services and thereby facilitate the performance of its regulatory tasks. The objectives of the measuring system expanded over time to include, for instance, facilitating a conscious selection of operators and

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<sup>9</sup> SZÉP = SZÉlessáv Projekt (Project Broadband)

services by consumers, thereby helping to stimulate competition in the telecommunications market to provide users with increasingly better quality services.

As part of the project, in 2015 the NMHH deployed an interactive system publishing the results of its measurements of certain quality indicators for internet access services and net neutrality parameters at <https://szelessav.net>.

As part of the development of the “Mobile neutrality” measurement system last year, the measured technologies were expanded. This year, browser internet speed measurement via TLS-encrypted transmission will be introduced. The development is necessary because browsers recommend website access primarily through the HTTPS and not HTTP protocol, so speed measurement adapted to the user experience should also apply this mode of transmission. When developing their networks, operators cannot always reduce the transmission delay time while increasing speed, for technological reasons, so the development must be implemented in such a way that high-delay and high-speed networks (high-BDP) can be measured as accurately as low-speed networks. With the measurement system in operation since 2015, upgrading the background systems has become a timely issue to ensure future-proof operation. Therefore, not only the replacement of the framework operating system is planned for this year, but also the development of the database and the language of the script connections operating it.

In relation to open internet access, the NMHH examines both the mobile network and wired access:

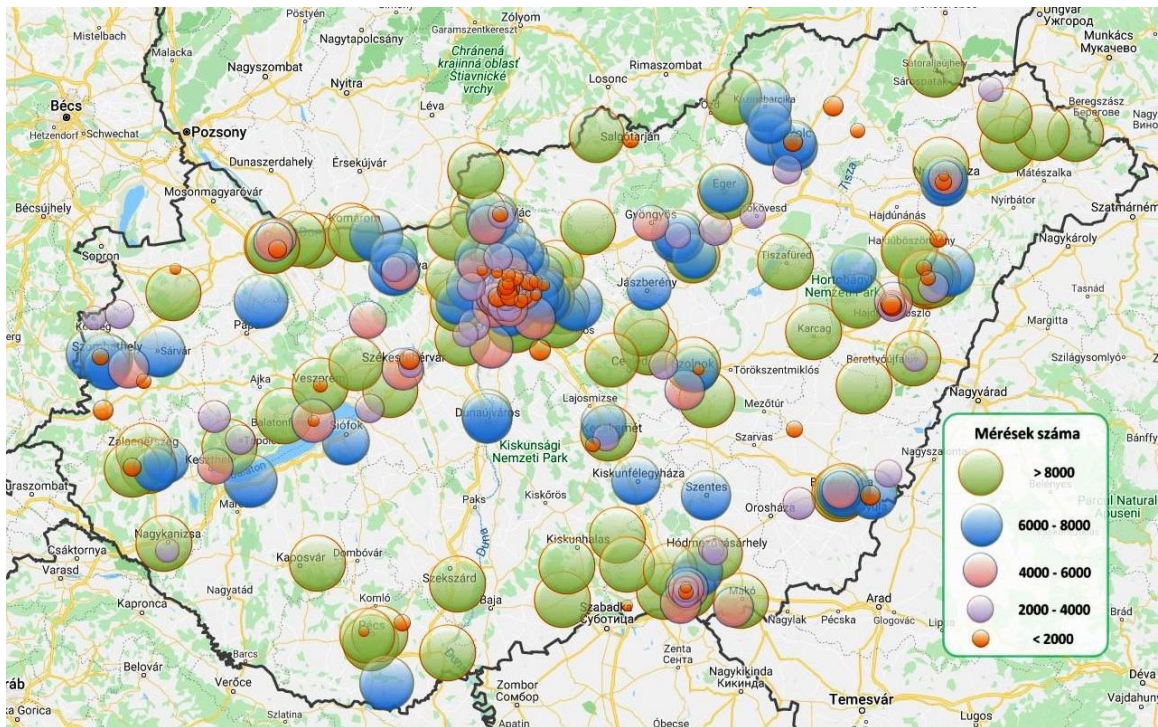
Most of the measurements in connection with mobile networks are carried out by sensor-equipped cars, which check the coverage, the signal strength and the download and upload speeds of the networks for each technology throughout the whole country. In addition, the “Mobile neutrality” measuring system scans the various tariff plans of the operators for port openness and service quality according to a preset program.

Measurements related to fixed-line networks are carried out by measuring boxes installed at fixed access points, which measure the actual quality of fixed internet access services and different plans on an hourly basis.

Given that the EU Regulation prescribes much stricter requirements regarding different speeds for fixed internet access services, and that measurement results related to fixed-line networks are, by their nature (same measuring point, constant conditions, measurement results related to specific plans), more suitable for use as a basis for comprehensive analyses, the NMHH will henceforth use these results to make statements about service quality below.

Over the past year, the NMHH performed long-term measurements (for a number of months, at hourly intervals) using measuring instruments installed at 300 measurement locations at fixed access points depicted below (see Figure 1), where the size of the circles indicates the number of measurements at the specific measuring point.





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

Both the old and new Electronic Communications Decree require all internet access providers to **specify in their subscriber contracts** the quality indicators listed in the regulation, such as **the offered (advertised) bandwidth as well as guaranteed download and upload speeds**.

The measurements involved 134 service plans of 34 operators.

During the year, the number of home office hours multiplied due to the pandemic. This fact clearly influenced the number of measurements via browsers, as the interest in internet speed increased during each COVID wave. Accordingly, the number of measurements over the past year developed as follows:

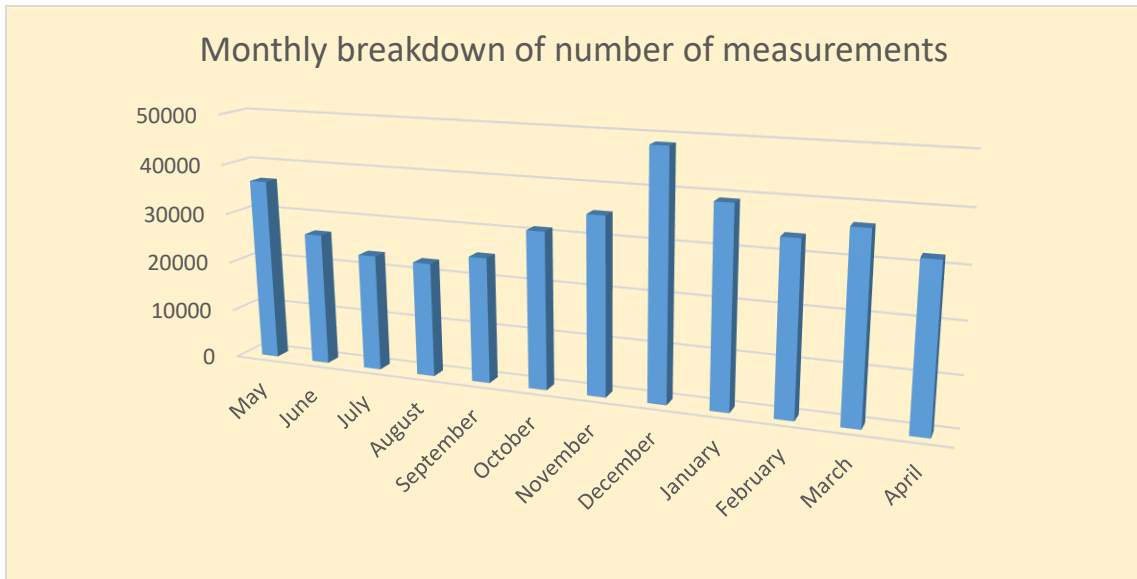


Figure 2: Monthly breakdown of number of measurements (Source: NMHH’s broadband measurement system)

The number of pre-programmed (measuring box) measurements is mostly influenced by the number of measuring boxes requested, which resulted in much more balanced measurement numbers compared to the above-mentioned measurements, with steady growth. This growth is likely to have been driven by an increased interest in the stability of internet access due to COVID.

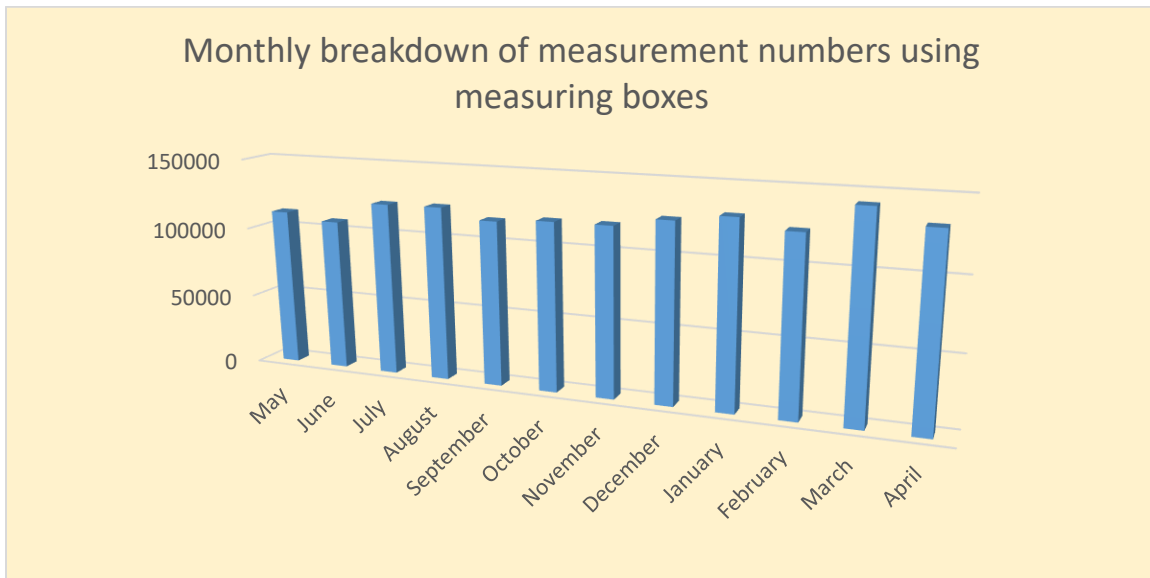


Figure 3: Monthly breakdown of measurement numbers using measuring boxes (Source: NMHH’s broadband measurement system)

After analysing the results of the **measurements**, it became apparent that operators specify many types of offered and guaranteed speeds in their plans, often with significant differences between plans using the same technology. Comparing the number of operators, technologies and plans with the number and distribution of measurement points, **the measurement results cannot be considered representative**. Taking this into account, the NMHH arrived at the following general conclusions:

- Similar to last year's report, and based on the results of this year's hardware measurements, the NMHH analysed how the actual download and upload speeds of fixed internet access services develop compared to the figures offered in the contract (see Table 1).

Offered (advertised) download speed range	Offered download speed achieved up to								
	90% in at least following % of measurements			80% in at least following % of measurements			70% in at least following % of measurements		
	90%	80%	70%	90%	80%	70%	90%	80%	70%
Up to 10 Mbps	73.68	73.68	78.95	78.95	84.21	89.47	84.21	84.21	89.47
11–30 Mbps	72.97	78.38	78.38	78.38	83.78	86.49	81.08	83.78	86.49
31–100 Mbps	57.89	68.42	71.05	68.42	76.32	81.58	76.32	92.11	92.11
over 100 Mbps	47.66	57.03	62.50	67.19	75.78	83.59	74.22	84.38	88.28

Table 1: Ratio of achieving offered download speed (in % relative to number of monitoring locations)

- **Based on the results, in the 0–100 Mbit/s speed ranges, the compliance values have not changed significantly since last year, while in the highest speed range representing real broadband, the improving trend of previous years continued.**
- **In the 0–100 Mbit/s speed ranges, 70% of the offered download speed was achieved in the vast majority (86%) of measurements performed at the measurement points, but even at 80% the compliance rate was exceptionally high (81%).**
- **In the speed category above 100 Mbit/s, the achievement of download speeds offered was lower than in the other speed categories, but the differences have decreased significantly in recent years.**

Naturally, due to what was written above these results cannot be considered representative on a national scale and for all operators, but the providers are seemingly able to ensure a stable service on the measured network sections.

- Compared to last year's results, **the gap between the performance of fixed internet access services during peak and off-peak periods has narrowed slightly** (by roughly 8%), while intra-day fluctuations in download speeds remain (see Figure 4)

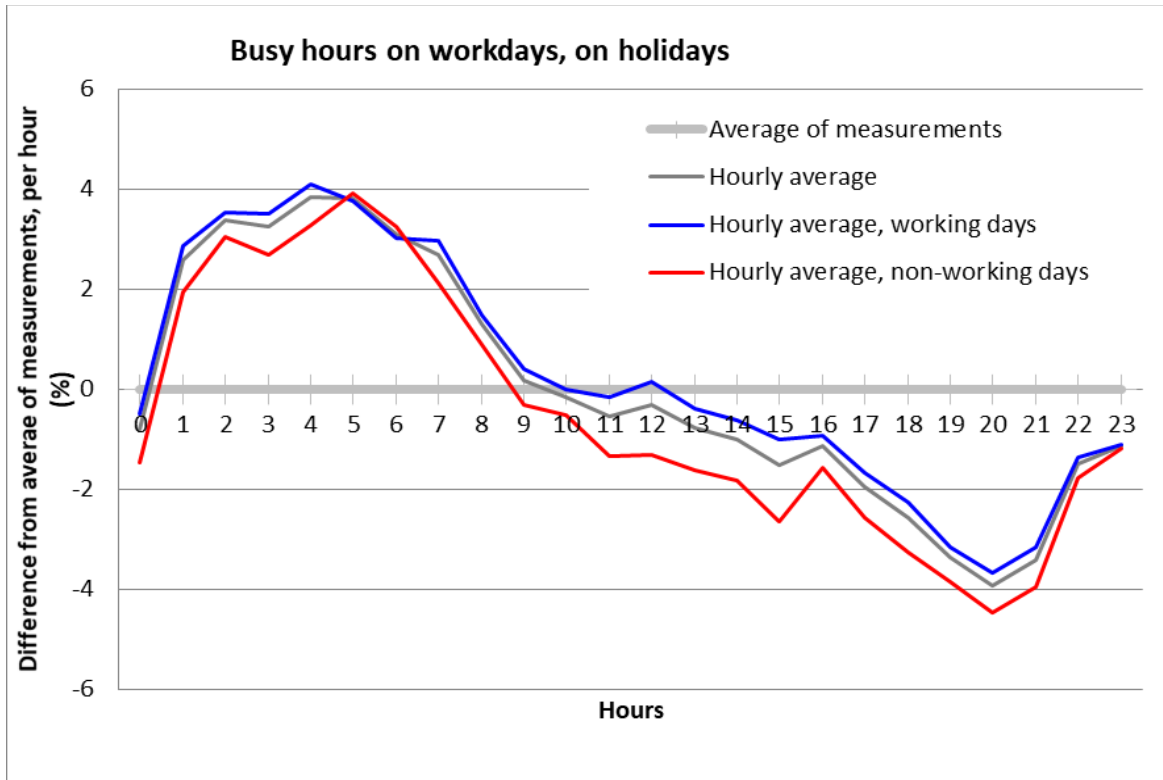


Figure 4: Daily distribution of fixed internet access speeds in relation to average download speeds

- Figure 5 details the achievement of the measured download speeds to those offered, broken down by technology.

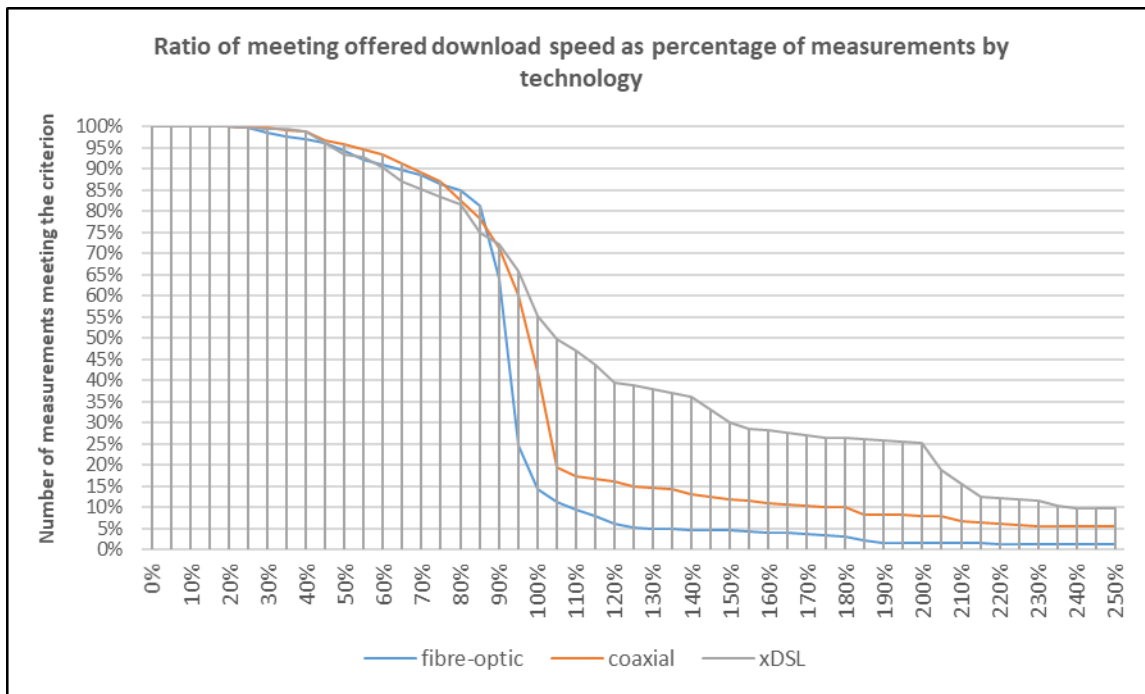


Figure 5: Achievement of download speeds by technology

Based on the figure, **excellent measurement compliance of up to 85% of the offered speed can be observed for all technologies.**

**The NMHH uses the analyses of fixed measurements to continuously monitor the availability of the internet access service and inform subscribers. Although the results of the measurements cannot be considered fully representative, it can be concluded that Hungarian fixed internet access services are reliable and stable, and that the quality indicators on speed show an improving trend every year.**

## 2.4 Special services<sup>10</sup>

In the reporting period, the NMHH continued its monitoring activity related to special services, primarily by reviewing the GTCs containing the conditions of installation and handling any complaints received.

<sup>10</sup> Special (or specialised) services: services which are not internet access services because, even though they rely on internet protocols, they are optimised for specific content, applications or services, or a combination thereof, where the optimisation is necessary for the content, application or service to meet the requirements of a specific level of quality.

After reviewing the GTCs, there is still a relatively limited range of special services made available by the internet access providers. Fixed-line operators offer VoIP and IPTV<sup>11</sup> services, whereas mobile operators make VoLTE services available.

Fixed-line operators **ensure a higher priority for the aforementioned special services than for the internet access service in terms of bandwidth, and provide guaranteed download and upload speeds for the internet access service even when used together.**

**Mobile operators consider the VoLTE service they offer to be an extension of the voice service, not a separate service.** The VoLTE service technology may be provided with any tariff plan/service. **The filtering condition for usage is the VoLTE capability of the device used by the client.**

Given that no complaint was received by the Authority in the reporting period from users in relation to special services, no procedures were initiated.

**Based on the above, there was no need for a detailed inspection in this reporting period, however, the Authority will continue to monitor the operators' practice related to special services.**

## **2.5 Assessment of how transparency requirements governing ISPs have been implemented**

The NMHH continuously monitors the contractual terms and conditions of internet access services. During this monitoring, it checks, among other things, **how operators incorporate in their contractual terms and conditions and procedures the mandatory requirements stipulated in Article 4 of the EU Regulation, and what steps they take to enforce them.**

The purpose of this continuous monitoring is to ensure that the contracts related to internet access services include all information relevant to subscribers in an unambiguous, understandable and comprehensive manner to facilitate subscribers' decision making.

**In this reporting period, the Authority did not carry out a comprehensive inspection related to operators' transparency measures. However, the key finding of last year's inspection was that the GTCs of the operators still did not fully include the mandatory substantive elements of the EU Regulation for contracts. As indicated in the introduction, together with the transposition of the provisions of the Code, the Quality of Service Decree was also amended to ensure that Hungarian regulations fully comply with the requirements of the EU Regulation. The Regulation entered into force on 21 December 2020 and its provisions must be applied by operators from the end of June 2021.**

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<sup>11</sup> VoLTE: Voice over LTE

**The NMHH expects a significant improvement in the current situation thanks to this amended decree, and it will carry out a detailed inspection affecting a wide range of operators only after it becomes obligatory to apply it.**

Below we briefly present the current situation regarding transparency requirements as well as the Authority's expectations about the amended decree.

### **2.5.1 Actual disclosure of information that must be made public, as determined in the EU Regulation**

For reasons of transparency, the EU Regulation considers it a matter of key importance that the information be clear, transparent, understandably structured, and easily accessible. Only if subscribers are informed may this result in everyone selecting the optimal package best suited to their means and consumer habits.

Problems previously identified by the Authority:

- **the GTCs and individual subscriber contracts of internet access providers contain a wealth of relevant information, but they are far from the clear and easy-to-understand form required by the EU Regulation;**
- **the factors influencing the quality of the internet access service are not discussed in detail** either in the GTCs or in the contracts;
- although the **standard service description table<sup>12</sup>** required by legislation is published by each operator on its website, such content is still not consistent with the provisions of the EU Regulation;
- **with regard to the comparability of services, the operators only display their own packages on their websites, and although all operators know the Authority's own speed-measuring application ([szelessav.net](http://szelessav.net)), this link cannot be found on any of the operators' websites;**

To remedy these problems, the national regulation has been amended on the following points:

- The mandatory **standard service description table** that contains the most important elements of the contracts **has become simpler and is completely harmonised with the provisions of the EU Regulation;**
- GTCs were expanded **with factors affecting the quality (especially the speed) of internet access services;**

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<sup>12</sup> The NMHH prescribes the standard service description table in Article 30 of NMHH Decree 2/2015 (III.30) on the detailed rules of electronic communications subscriber contracts to facilitate the comparison of different packages.

- **the law obliges operators to make the [szelessav.net](http://szelessav.net) application easily accessible from the operators' own website.**

## **2.5.2 Application of speed values by operators**

With regard to internet access services, the speeds corresponding to the individual subscriber tariff plans can be considered one of the most important factors. This is the quality parameter that is understandable even for a layman subscriber, and is therefore easily comparable.

The previous situation regarding the use of speed figures can be briefly summarised below:

- **Although internet access providers include data in the contracts with respect to the targeted values for their services, such data is not harmonised with the requirements in Article 4 (1) (d) of the EU Regulation.**
- **In their GTCs, each operator only lists the terms and conditions for the speed targets required by the national regulation currently in force.**
- **The operators do not make information on speed parameters easily accessible, and also fail to provide a clear and easily comprehensible explanation as to how quality parameters may have an impact on internet access services in practice, and in particular on the use of content, applications and services.**

To remedy these problems, the national regulation has been amended as follows:

- **Speed definitions in the national legislation have been completely harmonised with the requirements of the EU Regulation; For fixed-line services:**
  - **a previously missing speed category available under normal conditions has been introduced;**
  - **instead of the theoretical maximum speed previously included in the contracts, the operators may only indicate a figure as the maximum speed that can be experienced in practice;**
  - **the speed specified in the advertisement may not exceed the associated maximum speed.**
- **Operators are required to include a clear and unambiguous list in the GTC on factors affecting the speed of the internet access service;**
- **a new operator coverage map has been required for fixed-line services, which must include the expected bandwidth at street level, and needs to be regularly updated.**



### 2.5.3 Application of quality indicators other than speed values by operators

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

The previous situation regarding quality indicators in addition to speed values is characterised as follows:

- In general, **operators currently only** indicate the quality targets set forth by the effective national regulation in their GTCs. In practice, this means they only **indicate speed values**.
- **Some operators indicated during the previous comprehensive regulatory investigation that they monitor the values of packet loss, delay and jitter, but do not disclose them** as they consider them internal technical parameters.
- **The operators still do not 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**.

To remedy the identified shortcomings and to standardise operator practices, the national regulation was amended as follows:

- **Delay, jitter and packet loss values were introduced in the GTCs**, near the speed values if possible, to increase transparency and facilitate the selection between different packages. (However, in relation to these qualitative indicators, the operator is only required to indicate a value if it has undertaken to do so.)

Although non-compliance with the mentioned quality indicators carries no legal consequence at present in the national legislation, this can be done later.

**In response to the fact that the GTCs of the operators do not fully include the mandatory substantive elements of the EU Regulation on contracts, the previous national legislation has been amended with the clear purpose of enforcing the necessary changes. The amended legislation, which entered into force in December 2020, provides a six-month grace period for operators to remedy their shortcomings.**

## 2.6 Complaint handling related to the open internet

In accordance with Article 4(1)(e) of the EU Regulation, operators must make legal remedies available to subscribers 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, meaning that these are known to subscribers.

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

The operator's practice and intervention relevant to the enforcement of open internet access may also be detected by end users in the form of a network or service quality error. Troubleshooting is governed by different rules from complaint handling. Thus the operator is required to investigate any reported faults. In addition, a confirmation message about the receipt of the reported fault must be sent to the subscriber and the issue must be registered. The period from the reporting to the elimination of the fault shall not exceed 72 hours. Immediately, but within 24 hours of resolving the fault, the operator shall notify the subscriber about the resolution, and register the means and time of said notification.

Thus, the subscriber can report the issue (including the complaint resulting from the fault referenced above) to the operator, which then investigates the issue. If the subscriber does not agree with the response received, or believes that the operator is not performing as per the provisions of the subscriber contract, the subscriber may refer the case to a court as per the dispute resolution procedure specified in the contract, or, in the case of subscribers who qualify as consumers, can seek assistance from an arbitration board. If the operator fails to investigate the complaint or violates the laws pertaining to the subscriber's legal relationship, the party filing the complaint may turn to the NMHH.

### **2.6.1 Complaints received by operators**

**According to previous inspections, the internet access providers comply with their obligation to indicate the rules regarding legal remedies in their GTC, so the possibility for seeking legal remedy is available to subscribers.**

To assess the available options for legal remedy in practice, the Authority asked the operators to fill out a short survey on the subscriber complaints received by the operators regarding open internet access and the handling of these complaints.

**Based on the answers of the operators there is no specific practice for handling open internet complaints, because the operators handle their open internet complaints according to their general complaint management rules. As for the number of complaints, apparently only a negligible number of the complaints received are related to the issue of open internet access.**

## 2.6.2 Complaints submitted to NMHH

In the period under review, the NMHH received only a few complaints from end users about violations of the rules of the EU Regulation, based on which the Authority initiated proceedings.

It is important to note that for a complaint to be filed, the reporting person has to imply that the operator's practice violated the rules of electronic communications, namely, these complaints are not related to the subscriber's actual subscription relationship. Requests may be filed in relation to individual subscription relationships; one was received in the relevant period and is currently being investigated (see subsection 2.3.1.5 above).

**Based on the above, there is no systemic problem with respect to the enforcement of the open internet and the effective regulation can cope with the issues encountered. At the same time, end-user feedback is useful for the Authority as it draws attention to operator offers that may raise the suspicion of infringements of net neutrality rules.**

## 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 complement NMHH's monitoring activity and make it more complete.

On the one hand, the NMHH collected the relevant results of the annual internet market research conducted among subscribers and users, while on the other hand, it also had social listening research conducted on the opinions of the general public on the open internet.

### 2.7.1 Results of NMHH's annual market research

Each year, the NMHH prepares large-sample, nationally representative surveys on Hungarian internet usage among internet users living in Hungary aged 16 and older. The research is carried out on the internet using online surveys and involves 4,000 respondents.<sup>13</sup>

#### Results of 2020 NMHH research on the open internet

- Similarly to the results of market research in previous years, the opinion of Hungarian internet users on internet access has not changed: **The vast majority continue to believe that the internet should be free and without restrictions, open to all by default and with equal opportunities.**
- **Nearly 40% of internet subscribers have already tried to find some information of interest to them in the GTC or in the specific internet**

<sup>13</sup> NMHH research, Analysis of consumers on the electronic communications market. Internet and Household Survey, 2020 <https://nmhh.hu/szakmai-erdekeltek/hirkozles-szabalyozas/piackutatasok>

subscriber contract. 89% did find the information in question, but in nearly half of the cases (54%) this caused them difficulties.

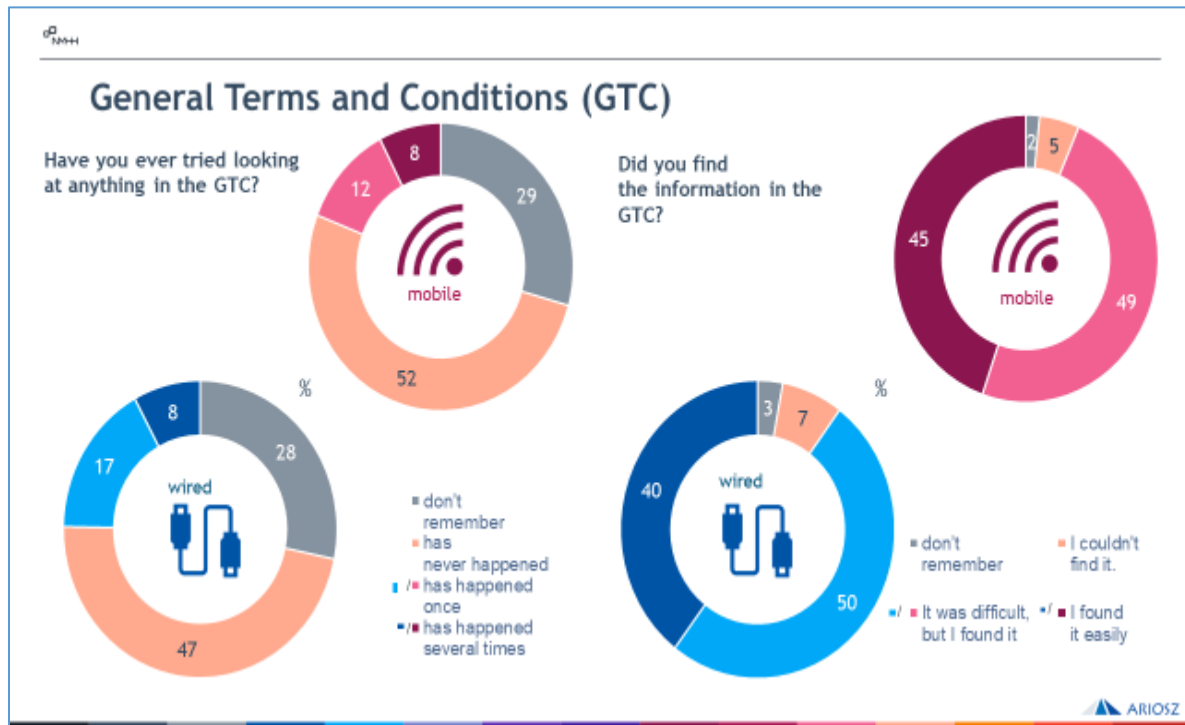


Figure 6: Searching for information in General Terms and Conditions (Source: NMHH Internet Survey, 2020)

- **The vast majority of consumers are satisfied with the internet service they use, the ratio of those expressly dissatisfied is extremely low. When comparing internet connections, users continue to be more satisfied with the mobile internet service used on a smartphone than they are with the fixed-line service, although the evaluation of both has improved slightly since 2019.** (The fact that all the factors examined were rated at least 4 on a scale of 1-5 shows a high level of average satisfaction). The weakest factors are data quota size and price in the case of mobile internet, and price in the case of fixed internet. However, there is no significant difference between the two types of mobile internet.

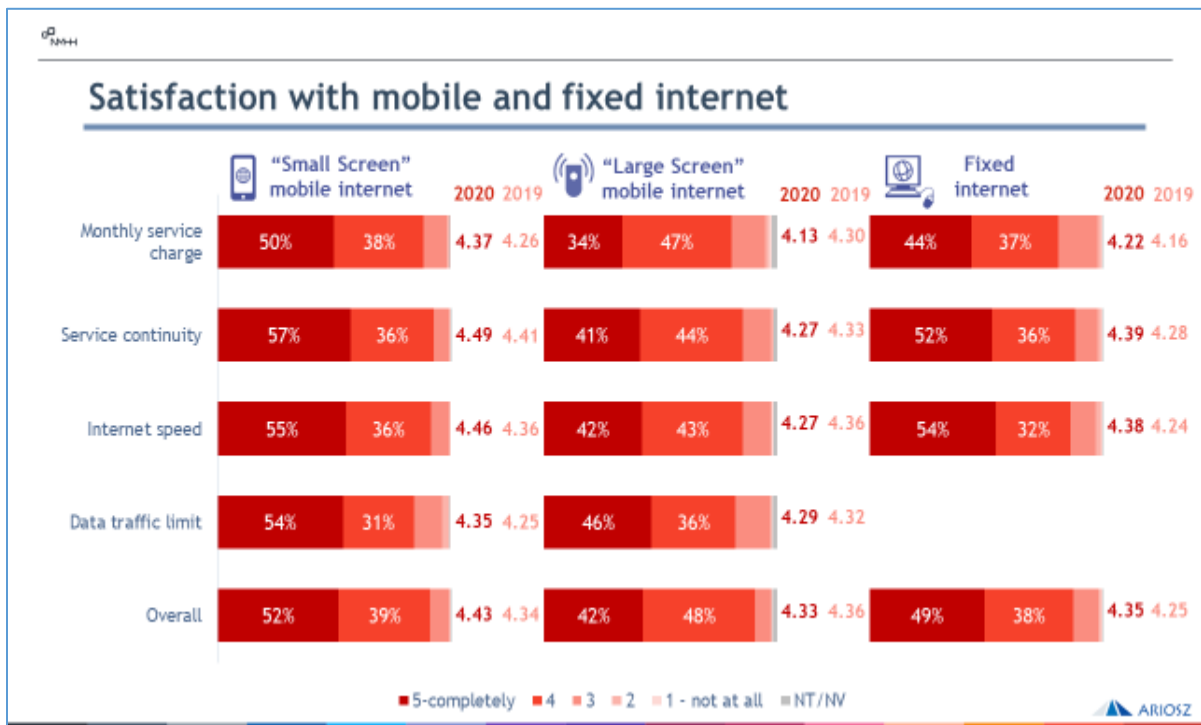


Figure 7: Satisfaction with mobile and fixed internet (Source: NMHH Household Survey, 2020)

- Compared to last year, the proportion of subscribers who measured the speed of their internet connection on a dedicated website decreased slightly. **As was the case in last year's survey, the reasons for measurements conducted for specific purposes were given by respondents as pure curiosity and slow internet connections.**

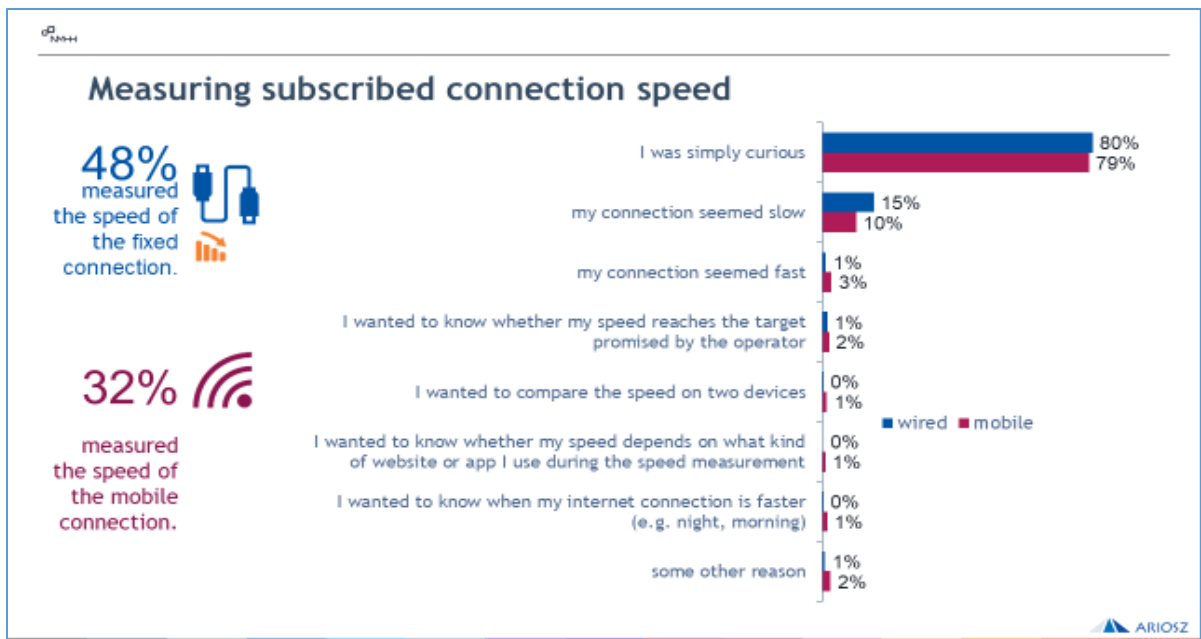


Figure 8: Measuring internet connection speed (Source: NMHH Internet Survey, 2020)

When looking at the background to speed measurements, three factors determine best whether the user performs such a measurement. The following factors were identified:

- **quality of the subscription** (those who judge the service negatively are more likely to measure the speed);
  - **internet literacy** (mainly experienced internet users conduct measurements);
  - **gender difference** (men are more likely to measure speed).
- **From the perspective of download speed, after last year this was the second year since the start of the surveys when the ratio of mobile internet clients satisfied with their operators (79%) exceeded the ratio of clients satisfied with their fixed access providers (74%).** This year's and last year's results show significant progress in the evolutionary process of interchangeability between mobile and fixed systems.
- **Regarding fixed internet access services, 65% of subscribers have experienced some problems** in the last year. Half of the respondents experienced a breakdown in the connection, and nearly 40 percent experienced a general slowdown from time to time. **Regarding mobile internet, 57% of subscribers have experienced problems.** The most common problem detected was the lack of signal/coverage, followed by a general slowdown in the connection.

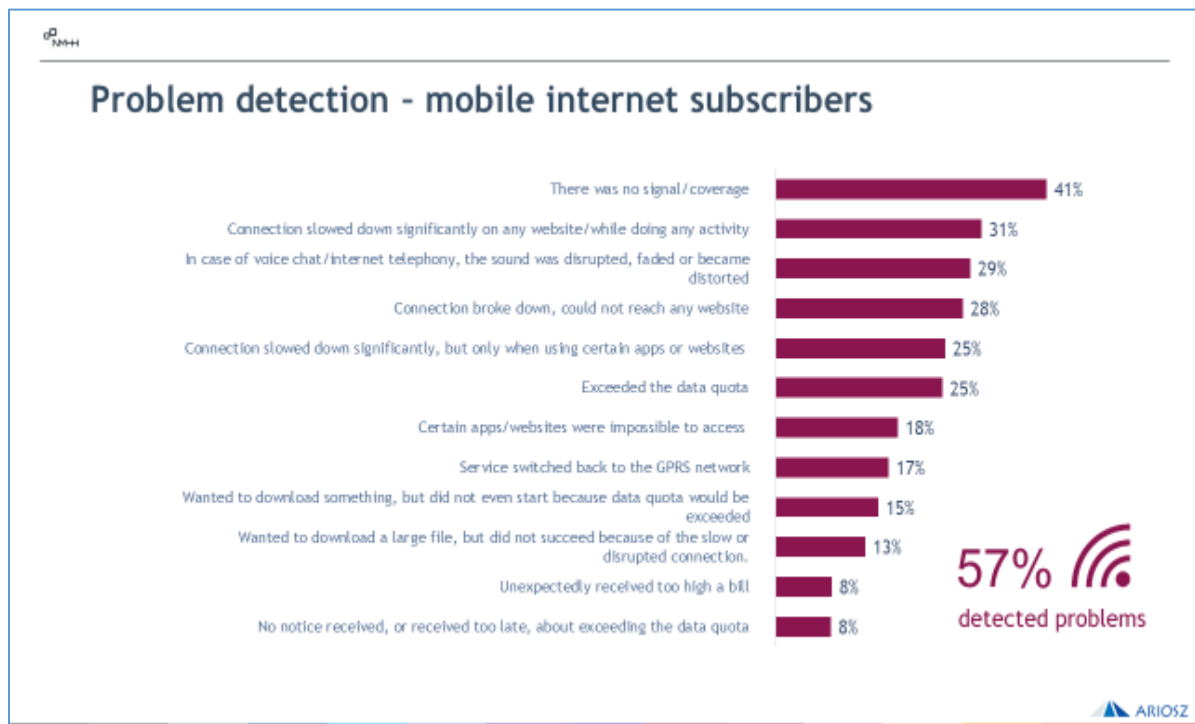


Figure 9: Problem detection for mobile internet access services (Source: NMHH Internet Survey, 2020)

- Although **quota-based (rated) packages** are still the most popular among mobile internet subscribers, there is a **significant decrease** in the proportion of

subscribers to this type of service compared to last year (37% => 31%). The proportion of **subscribers to zero rated plans<sup>14</sup> (26%) and subscribers to unlimited plans (21%) remained unchanged.**

**Unlimited plans are particularly attractive for young people (generation Z).<sup>15</sup>** The demand for zero-rating tariff plans was very similar to last year, and nearly a third (28%) of the respondents would subscribe to this type of plan if the operator could offer it at a similar price to the rated plan.

**Changes related to COVID-19 pandemic:**

- The majority of households use the channels of operators to find out what is on offer if they need a new plan. **The proportion of people receiving information from traditional sources, especially from personal customer service (probably due to the COVID-19 pandemic) has decreased, and the use of social media sites for this purpose has increased.**

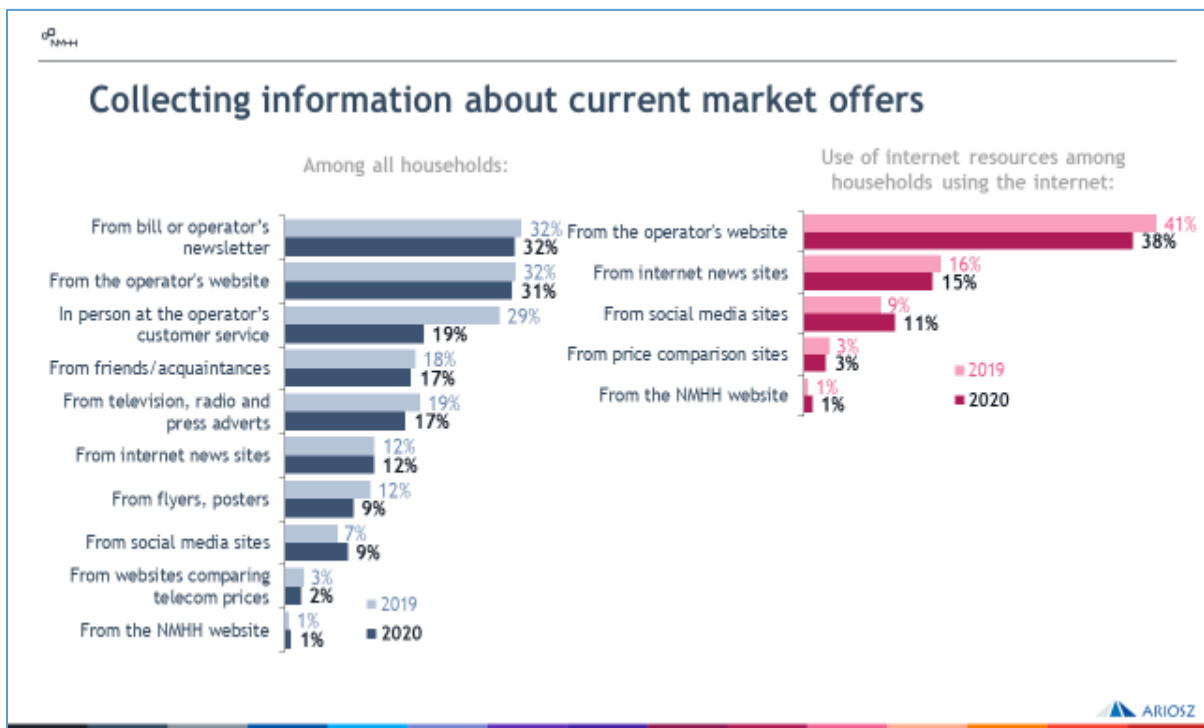


Figure 10: Collecting information about current market offers (Source: NMHH Household Survey, 2020)

- **The majority of consumers continue to communicate with their operators by phone, and the second most common form is in person, although use of the latter decreased significantly last year.** However, the rate of electronic administration has increased: online channels are now used by a quarter of the

<sup>14</sup> In case of zero-rating plans, the services of certain social media participants or certain applications are not included in the quota by the operator.

<sup>15</sup> By Generation Z, the research refers to the 16-23 age group.

population, and this is the most common form of contact among 18% of the population. **Changes in the use of communication channels are likely to have been affected by restrictions brought on by the coronavirus.**

- **30% of internet users reported that they used the internet more frequently than before during the lockdown period, and 30% also said that they used their fixed internet connection more often.** Only 13% indicated that they used the internet rather than the telephone for communication. Only 1% started using the internet during their forced home office period, and the same number complained that their mobile internet quota was too low.
- All of the **online activities investigated were conducted more intensively by respondents during the pandemic than before.** The **intensity of online communication increased very strongly** (in the case of one third of internet users). **In the case of remote working and remote education, the number of stakeholders increased at a higher rate.** This ratio is exceptionally high among **students: 60% of them started to learn online. 39% of workers switched to online working**, while the majority probably did not need or have the opportunity to do so during the pandemic. Overall, half of internet users started, or did something more frequently, from the online activities listed below.

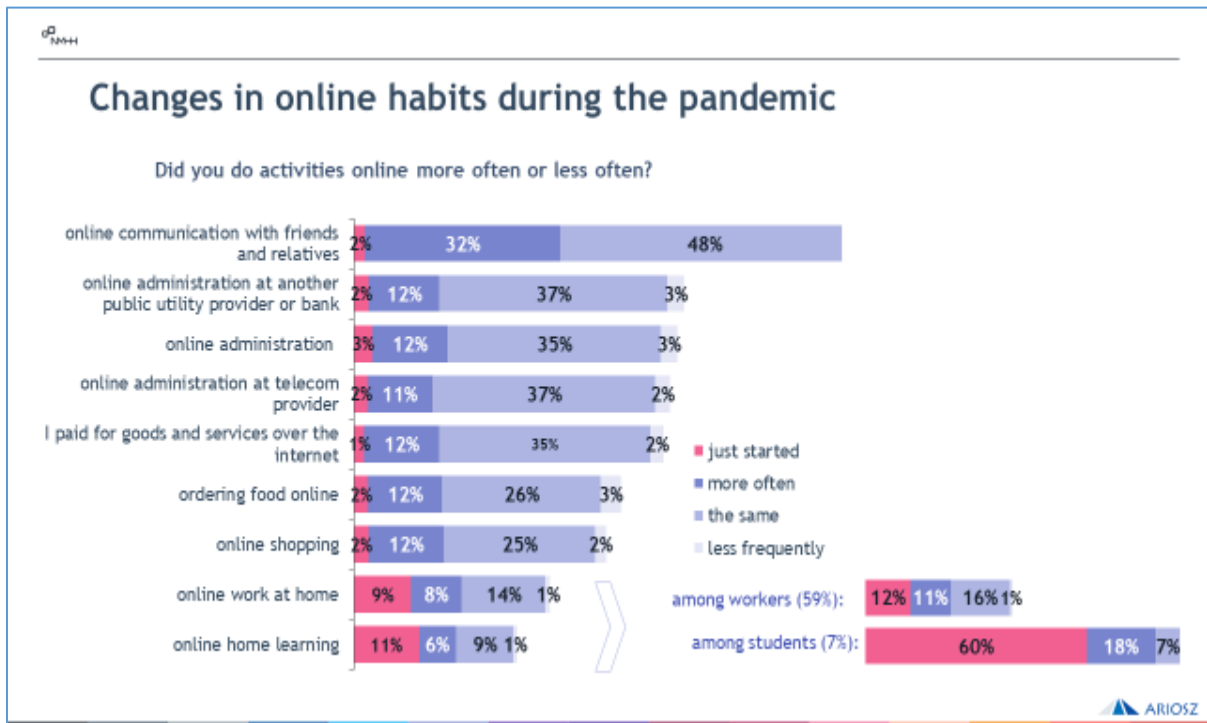


Figure 11: Changes in online habits during the pandemic (Source: NMHH Household Survey, 2020)



## 2.7.2 Results of social listening<sup>16</sup> research

The NMHH continued its social listening research on net neutrality, and examined the period between 1 May 2020 and 30 April 2021, in line with previous years' practice. The main findings of the research are as follows:

- **Following the trend of previous years, the number of mentions of 'net neutrality' worldwide decreased again this year.** This is primarily because **there has been no significant event in the world or in Hungary in this topic. The interpretation and significance of the subject remains virtually unknown to the majority of the population.**
- A significant proportion of associated appearances is related to **specialised portals**. There is no considerable activity on pages with high numbers of visits. While in the **Hungarian speaking area** the highest percentage of **mentions** (55%) is **generated on websites**, in **English and German speaking regions** the open internet was the **most frequently mentioned on Twitter**.
- Compared to the previous period under review, the NMHH's situation changed significantly in relation to mentions related **to the open internet**. While the NMHH appeared in almost **50%** of the mentions a year ago, this rate is only **21%** in the current period. At the same time, **90% of the content referring to the NMHH is neutral**, which is understandable as an authority on the one hand, but also underlines its professionalism on the other.
- **In terms of standpoints, no significant change has taken place in comparison to the previous years.** Opinions supporting unlimited access to specific content by ignoring net neutrality still prevail. Comments **supporting net neutrality** appeared mostly **on specialised portals**, while comments **criticising it** appeared mostly **on social networking sites**.
- **During the COVID-19 period, the number of mentions demanding the enforcement of net neutrality decreased significantly, and the issue of internet availability came to the fore.** The fact people **talk less about the internet without context** indicates that the internet has become a basic service, and representations on the topic are only mentioned in connection with certain **related events** (e.g. the spread of home office).
- During the COVID-19 period, **the number of mentions and opinions about operators were determined mostly by operators' reactions and measures**

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<sup>16</sup> Social listening is a procedure that identifies, collects, analyses and evaluates what has been published about a specific topic on the internet.



**related to the coronavirus** rather than by the importance of enforcing open internet access.

- **Some topics have come to the forefront during the COVID-19 period:** the importance and number of mentions of **e-commerce, e-administration, home office** and **telecommunications as basic services** has increased. These changes have fully mirrored the changes in people's circumstances and needs, but whether these changes will continue in the long run is unpredictable.

### 3 SUMMARY OF OPEN INTERNET SITUATION 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 to avoid situations where ownership of the network infrastructure leads to exclusive control over the content and services transferred over the network.**

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

The NMHH continued its monitoring activity during the reporting period, the key experiences of which are summarised below:

- **No systemic problem can be observed concerning the enforcement of open internet access.** 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, and the market is characterised by services of improving quality.
- However, there were some cases where the Authority became aware of operator practices that need clarification or further detailed investigation. **In one case, the operator voluntarily deleted the infringing condition after clarification of the question, and in another case, the investigation is ongoing with regard to the question requiring a detailed investigation.**
- The **state of emergency related to the COVID-19** pandemic was an exceptional challenge for Hungarian networks and operators, since network data traffic increased drastically during the state of emergency. The fact that even the **significantly increased data traffic did not cause considerable disruptions or congestion** in the domestic networks **confirmed the level of preparedness of domestic operators and the network reliability.**
- The result of the Authority's social listening research confirmed the experiences of previous years that **although consumer awareness related to net neutrality has strengthened, the interpretation and significance of the topic is still unknown to the majority of the population.** The NMHH may play an important role in raising awareness based on the knowledge and experience it has accumulated.