TRAFICOM
Liikenne- ja viestintävirasto

# Annual Net Neutrality Report 2024

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# 1 Introduction

The openness of the internet, or net neutrality, is guaranteed by Open Internet Regulation ((EU) 2015/2120)[1]. In Finland, compliance with the Regulation is monitored by the Finnish Transport and Communications Agency (Traficom). The Regulation aims to safeguard equal and non-discriminatory treatment of traffic in the provision of internet access services and to ensure users' right to open internet access. For a more detailed definition of net neutrality, please refer to chapter 2 below.

Based on Traficom's findings, the status of net neutrality in Finland has remained healthy, as in previous years, and Finnish internet access service providers (ISPs, operators) comply with the Regulation. For a more detailed description of Traficom's actions and findings, please refer to chapters 3 and 4 below. Traficom has maintained an active dialogue on net neutrality with the industry. Like in previous years, all issues that were raised were mainly resolved or progress was made through negotiations with operators and other stakeholders.

Topical matters during the period covered by this report included the EU legal framework as well as the IP interconnection rules and the discussions around them, 5G network slicing, mobile security services based on DNS filtering, and preparedness and related prioritisation of services in the light of net neutrality. Traficom has also continued to provide guidance on the EU sanctions concerning the broadcasting and distribution of content by Russian media outlets and continued discussion about the ways in which the speeds of FWA connections are reported, among other things.

Some of Traficom's activities during the period covered by this report were related to measures initiated in previous years. These included the development and certification of the Bittimittari.fi service, and the issuing of instructions concerning the national Digirail project.

The Open Internet Regulation requires national regulatory authorities to publish an annual report regarding net neutrality related monitoring activities and findings. This report must be provided to the European Commission and the Body of European Regulators for Electronic Communications (BEREC).

Under the Regulation, Traficom must, in its supervisory activities, take account of BEREC guidelines regarding the application of net neutrality rules as diligently as possible[2]. In line with the guidelines, this report covers the time period from 1 May 2023 to 30 April 2024. As instructed in the guidelines, the report contains an overall description of net neutrality, Traficom's monitoring activities and their main results, complaints submitted to Traficom, reported infringements, and the availability and quality development of non-discriminatory internet access services.

Traficom did not carry out any technical net neutrality measurements or impose new technical service requirements or minimum quality requirements based on the Regulation during the period covered by this report.

This report comprises the following chapters:

[1] Regulation (EU) 2015/2120 of the European Parliament and of the Council
[2] BEREC Guidelines on the Implementation of the Open Internet Regulation

- Chapter 2: Net neutrality in a nutshell
- Chapter 3: Equal treatment of traffic
- Chapter 4: User's rights
- Chapter 5: Bittimittari.fi measurement tool
- Chapter 6: Trends in internet access services
- Chapter 7: Stakeholder cooperation and other activities

# 2 Net neutrality in a nutshell

Under the EU Open Internet Regulation, users of internet access services have the right to access and distribute information and content, and to use and provide applications and services of their choice. Users have this right irrespective of the origin or destination of the information. This principle is also called net neutrality.

End users and ISPs are still free to agree on the features of internet access services, such as speed, included data volumes or price. However, such agreements may not limit users' rights to open internet access.

Net neutrality also means that users have the freedom to use the terminal equipment (such as a phone or modem) of their choice. However, the terminal equipment must meet the technical requirements imposed by the operators.

## 2.1 Equal treatment of traffic as a starting point

The principle of net neutrality requires operators to treat all internet traffic equally. For instance, operators may not usually restrict traffic to certain internet addresses, impose restrictions on certain types of traffic or apply different pricing plans to the use of different applications. Operators may, however, offer subscriptions with different levels of quality as well as application-agnostic connections, such as low-latency connections for online gamers.

As an exception, operators may restrict internet traffic as necessary in order to

a) comply with legislation, or orders by courts or public authorities

b) preserve the security of the network and terminal equipment

c) prevent network congestion and mitigate the effects of exceptional or temporary congestion.

Operators may take reasonable traffic management measures designed to promote the efficient use of network resources and optimise the quality of internet services. In order to be deemed reasonable, such measures must be transparent, non-discriminatory and proportionate, and they must not be based on commercial considerations but on objectively different technical quality of service requirements of specific categories of traffic.

Furthermore, operators are free to offer services in their network that are optimised for specific content, applications or services requiring a higher level of connection quality than provided by ordinary internet access services. Services requiring opti-

misation may include telephone services in the mobile network (e.g. VoLTE), television services provided by operators over broadband (IPTV), M2M services, or access to the critical systems of industry or e.g. airports.

However, all subscribers to internet access services must be treated equally, without discrimination. This means that operators may not e.g. prioritise corporate subscriptions over those of other customers. Operators may offer optimised services only if it does not lower the general quality of internet access services.

## 2.2 Terms of contract and net neutrality

Net neutrality also means that operators must provide clear and comprehensible information about the characteristics of different subscriptions in their contracts and on their websites. Customers must be informed of e.g. the following:

- the speed of the internet access service as required by the Open Internet Regulation
- how data quotas, speed or other quality factors may in practice affect the internet access service and the use of different contents, applications and services, in particular
- how traffic management measures applied by the operator may affect the quality of the internet connection
- how ordered services that require optimisation (such as the above-mentioned IPTV) affect the internet access service, including its speed.

# 3 Equal treatment of traffic

## 3.1 Sanctions on Russian media outlets

Traficom continued to receive numerous queries about the sanctions that the EU has imposed against the broadcasting and distribution of content by Russian media outlets, which were updated once during the period covered by this report:

- Council Regulation (EU) 2022/879[3]
- Council Regulation (EU) 2022/2474[4]
- Council Regulation (EU) 2023/427[5]
- Council Regulation (EU) 2023/1214[6]

[3] Council Regulation (EU) 2022/879 of 3 June 2022 amending Regulation (EU) No 833/2014 concerning restrictive measures in view of Russia's actions destabilising the situation in Ukraine
[4] Council Regulation (EU) 2022/2474 of 16 December 2022 amending Regulation (EU) No 833/2014 concerning restrictive measures in view of Russia's actions destabilising the situation in Ukraine
[5] Council Regulation (EU) 2023/427 of 25 February 2023 amending Regulation (EU) No 833/2014 concerning restrictive measures in view of Russia's actions destabilising the situation in Ukraine
[6] Council Regulation (EU) 2023/1214 of 23 June 2023 amending Regulation (EU) No 833/2014 concerning restrictive measures in view of Russia's actions destabilising the situation in Ukraine

Those who contacted Traficom wanted guidance on the websites that ISPs are required to block and the types of traffic the Open Internet Regulation allows them to block. Traficom does not have the competence to monitor compliance with the sanctions, but because Traficom does supervise compliance with the Open Internet Regulation, it had to assess which kinds of blocks ISPs can implement under the Regulation imposing the sanctions (the 'Sanctions Regulation').

Traficom considered it important to reach a common understanding of the matter at the EU level and participated in the discussion by BEREC, the Body of European Regulators for Electronic Communications, to reach a common view. This was difficult because of differences between the language versions of the Sanctions Regulation and the fact that it was unclear what content associated with the TV channels should be blocked on the internet.

In Traficom's view, the Open Internet Regulation does not prevent the implementation of the sanctions, and the Sanctions Regulation also requires operators to block websites that distribute content by the entities listed in Annex XV to the Regulation. Therefore, operators can block domains related to these entities.

Traficom also stated that the entities listed in Annex XV to the Sanctions Regulation are not legal persons but channels, and that in Traficom's view, any blocking measures may be targeted at least at those websites that the legal persons behind the entities use to distribute content covered by the sanctions.

Traficom provided ISPs with information on domains and subdomains that they should at least be allowed to block under the Sanctions Regulation. During the period, Traficom continued to update the more comprehensive memorandum on the implementation of media sanctions originally published on 5 April 2023[7]. The memorandum includes a list of websites that Traficom has currently identified as ones that operators should at least be allowed to block under the Sanctions Regulation.

Based on the information collected by Traficom, ISPs have mainly implemented the blocks based on domains. Only one ISP has implemented blocks based on IP addresses corresponding to the domains.

During the period covered by this report, Traficom has worked closely with the Ministry for Foreign Affairs and, for example, responded to a reporting questionnaire on media sanctions. Traficom has also processed two customer complaints related to media sanctions. One of the complaints by a customer proved to be unfounded. As far as the other complaint is concerned, the actions taken in the matter were considered to have complied with the sanctions Regulation, and the blocking of the website subject to the complaint had thus been justified and in accordance with the regulations.

## 3.2 Reform of the EU legal framework and IP interconnection rules

In relation to the debate launched by ETNO (European Telecommunications Network Operators' Association) and the European Commission on the need for providers of broadcast content services to contribute to the cost of building networks, the debate continued during the period covered by this report after the European

[7] Memorandum on the implementation of media sanctions imposed due to the war in Ukraine in light of the Open Internet Regulation (PDF)

Commission launched a public consultation on the future communication infrastructure[8] in February 2023. The consultation was open until 19 May 2023. Both Finland and BEREC prepared their own responses to the consultation.

Traficom has participated actively in this BEREC work, during which Traficom has received over 70 different studies, advocacy papers and invitations to different events concerning the matter and met with various stakeholders. In Finland, Traficom has also supported the preparatory work of the Ministry of Transport and Communications, informed stakeholders of progress on the matter and met with various actors.

Stakeholder meetings and advocacy work have also continued after the consultation was closed, as the Commission published a White Paper – "How to master Europe's digital infrastructure needs?"[9]. The consultation began on 22 April 2024 and closed on 30 June 2024. Even in this context, reference was made to the above-mentioned initiative and to the fact that a separate dispute resolution mechanism may be needed to resolve hypothetical interconnection disputes. However, it should be noted that in this consultation the Commission is seeking views on a much broader theme, namely the reform of the EU regulatory framework for telecommunications in its entirety.

BEREC is also preparing its own comprehensive IP interconnection report, which will be published for public consultation in June 2024. Traficom has actively participated in the preparation of the report and sent an extensive request for information concerning it to Finnish ISPs in spring 2024.

In April 2024, the debate was further broadened by Enrico Letta's report focusing on the internal market[10]. The solution presented by Letta is the strong integration of the Single Market to increase the size of telecommunications companies within the EU. Letta also proposed concrete measures related to net neutrality, including the Commission recommendation on the use of network slicing and the establishment of an EU regulatory authority responsible of guaranteeing the monitoring of net neutrality in the EU.

These measures are part of the political debate and, next, we expect to hear the new Commission's policies and legislative proposals on the subject. However, as the matter is very significant, Traficom actively follows the situation and participates in the related discussions.

## 3.3 Traficom monitored the need to update its recommendation on filtering traffic

There was no need to amend Traficom Regulation 312 A/2020 S on filtering traffic to certain communication ports for information security reasons, which was updated in 2020. The Recommendation describes both current and previous filtering recommendations.[11] Traficom regularly examined the recommendations both within the agency and in collaboration with external stakeholders.

[8] The future of the electronic communications sector and its infrastructure
[9] White Paper – "How to master Europe's digital infrastructure needs?"
[10] Much more than a market (PDF)
[11] The Recommendation is available on Traficom's website ("Filtering traffic in telecommunications operators' networks to certain communications ports for information security reasons").

Each operator makes decisions concerning the application of the Recommendation independently, and is individually responsible for meeting its information security obligations. If necessary, operators may also be required to implement additional filters to those referred to in the Recommendation. Lifting a recommendation does not prevent an operator from continuing to filter the relevant traffic if it still considers it to be necessary and lawful.

In Traficom's view, operators have complied well with the basic principles of the Recommendation, and as a result, there has so far been no reason to amend them. It has also been considered unnecessary to lay down provisions on the matters covered by the Recommendation in the binding form of a regulation.

## 3.4 Regarding a security service offered for mobile network subscriptions

During the period covered by the previous report, Traficom engaged in dialogue with a telecommunications operator about a security service related to DNS blocking for mobile network subscriptions. Based on the discussions, it appeared that the service in question could be implemented within the framework of the BEREC guidelines.

The dialogue continued during the period covered by this report, especially regarding the technical implementation of the service. The dialogue concerned, in particular, the implementation of the blocking lists used in the service and the end user's ability to control whether the service is on or off. Based on the discussions, Traficom considered the implementation of the service to be in accordance with the BEREC guidelines. It was not necessary to take further action in the matter in terms of supervision.

## 3.5 Optimised services

In connection with the Digirail project[12], Traficom was requested to provide its view on whether it would be possible to prioritise mobile connections used to control railway traffic over other traffic so that they would have access to a limited guaranteed bit rate (GBR).

In its response, Traficom stated that railway traffic control requires an uninterrupted connection, which cannot be guaranteed throughout the railway network based on commercial subscriptions. This function is critical to the safety of railway traffic, and in this respect, it meets the requirement of necessity set for 'optimised services' in the Open Internet Regulation (Article 3(5)). Because the number of prioritised subscriptions and the need for guaranteed bit rate (50 kbps) are limited, it can be considered ensured that the network capacity is sufficient to provide an optimised service in addition to other provided internet access services without the optimised service being to the detriment of the availability or general quality of internet access services.

In November 2023, Traficom was also requested to provide a separate assessment on the matter. In response, Traficom reiterated its view that it does not consider the described use case to be problematic and that the implementation of optimised services does not require an advance permission or decision issued by Traficom. On

[12] Digiratahanke.fi

this basis, Traficom concluded that there was no need to provide a separate assessment on the matter despite the request.

In autumn 2023, Traficom also continued discussions started during the period covered by the previous report with an operator about a service for the optimisation of video conferencing software. Based on the discussions, Traficom came to the conclusion that implementing such a service should be possible with the help of network slicing.

During the period covered by this report, Traficom has also discussed preparedness and related prioritisation of services in the light of net neutrality. In the discussions, Traficom pointed out that operators also have other tools for securing the reliability of their network and internet connections, such as the possibility of utilising the exception to prevent impending network congestion referred to in article 3(3) c) of the Open Internet Regulation.

### 3.6 5G SA slicing in the provision of FWA access

With one operator, Traficom also discussed the use of network slicing in the implementation of FWA (Fixed Wireless Access) subscriptions. In the productisation, a certain percentage of the incoming data transfer capacity of the cell was reserved for FWA connections, but in such a way that the normal operation of the other connections could be ensured. According to Traficom's policy, regarding the reporting of the speeds of broadband connections, such connections are considered fixed-line subscriptions. Therefore, the operator must report minimum, maximum and normally available speeds for them. For a more detailed description of the matter, see section 4.1

## 4 User's rights

### 4.1 Regarding the reporting of the speeds of broadband connections offered in fixed locations via the mobile network

During the period covered by this report, Traficom engaged in discussions with an operator about the speeds that the operator was reporting for their FWA (Fixed Wireless Access) connections. At that point, Traficom directed the operator's attention especially to the fact that according to the opinion regarding the speed of internet access services published by Traficom[13], the reported minimum and normally available speed of a connection should always be in reasonable proportion to the maximum speed of the connection. Based on the discussions, the operator reviewed their reported minimum and normally available speeds and proceeded to raise the quality level of the reported normally available speed to better correspond to Traficom's opinion. The matter was finally resolved in autumn 2023.

Traficom also discussed the same topic with another operator in the first half of 2024. The discussions with the operator concerned, among other things, the implementation of FWA subscriptions. Later, information on where and how it has reported the speed information on FWA subscriptions was requested from the operator. However, the matter has not yet been fully resolved in this respect, which is

[13] Opinion regarding the reasonable method of indicating the speed of internet access services (PDF)

why its processing will continue during the period covered by the next report as well.

# 5 Bittimittari.fi measurement tool

Traficom was able to conclude the development of the Bittimittari.fi tool for measuring the speed and quality of internet connections. The service was published in May 2023. However, the actual launch campaign was not held until October to verify the functionality of the service with large numbers of users first. At the end of 2023, the actions were focused on increasing the awareness of the service through various communication and marketing measures.

Planning for further development of the service was launched, and this was supported by continued cooperation in the BEREC working groups. In addition, numerous feedback and development proposals were received from consumers, which were utilised in the planning.

The first summary of the results of the data produced by the service was published in November 2023. System development related to the automation of data publication was initiated with a supplier. The aim is to launch automatic publication of the data produced by the service at the regional level in Traficom's Tieto.Traficom maps service starting in autumn 2024.

## 5.1 Certification of the Bittimittari.fi measurement tool

Traficom confirmed the quality survey of the Bittimittari.fi service[14] as a monitoring mechanism for establishing the quality of internet access referred to in Article 4(4) of the Open Internet Regulation for internet access services with internet speed of 100/100 Mbit/s or less that are considered fixed-line subscriptions with a view to reporting by a regulation issued by Traficom in November 2023[15].

Article 4 of the Open Internet Regulation provides for the possibility for the national regulatory authority to certify a monitoring mechanism to establish the quality of internet access services. According to the Article, the intention is to use such a certified mechanism to establish any significant discrepancy, continuous or regularly recurring, between the actual performance of an internet access service regarding speed or other quality of service parameters and the performance indicated by the provider of internet access services.

Under the Regulation, the kind of discrepancies described above that are discovered through the monitoring mechanism shall be deemed to constitute non-conformity of performance for the purposes of triggering the remedies available to the consumer in accordance with national law. In practice, the monitoring mechanism refers to a technical service or application that can be used to measure the speed or other quality of the internet access service received by a user.

The certification only applies to internet access services with internet access speed of 100/100 Mbit/s or less. The reason for the limitation is the fact that, due to potential constraints posed by home networks and differences between different web browsers, the reliability of the measurement results weakens when the access

[14] Quality-survey of the Bittimittari.fi service
[15] Regulation 58 C/2023 on the quality and universal service of communications networks and services (Finlex) (Finlex)

speed of the connection exceeds several gigabytes. The same impacts can be seen in connections with access speeds of less than one gigabyte. Therefore, Traficom has limited the initial application of the mechanism to speeds of 100/100 Mbit/s. This makes it easier to limit the impacts of the home environment. Traficom actively participates in cooperation between the teleregulators of different countries to develop measuring services. The possibilities for increasing the upper limit set for access speed measuring will be assessed as the work progresses.

# 6 Trends in internet access services

Under the Open Internet Regulation, Traficom must promote the continued availability of non-discriminatory internet access services at levels of quality that reflect advances in technology. Non-discrimination is at a high level in Finland, as can be seen in chapters 3 and 4 above.

## 6.1 Mobile network

Mobile broadband subscriptions started to rapidly gain in popularity in Finland during 2007. After considerable growth over the course of the decade that followed, this trend has since stabilised. At the end of 2023, there were 1.6 subscriptions with mobile data service per person in Finland. Limits on the use of mobile data have seen a steady decrease. At the end of 2023, 89 per cent of all subscriptions used to transfer mobile data had no limits on domestic data use, while the share of unlimited domestic data plans among mobile subscriptions purchased by household customers was nearly 89 per cent. There were 1.4 unlimited data plans per person in total, up 1 per cent compared to the previous year.

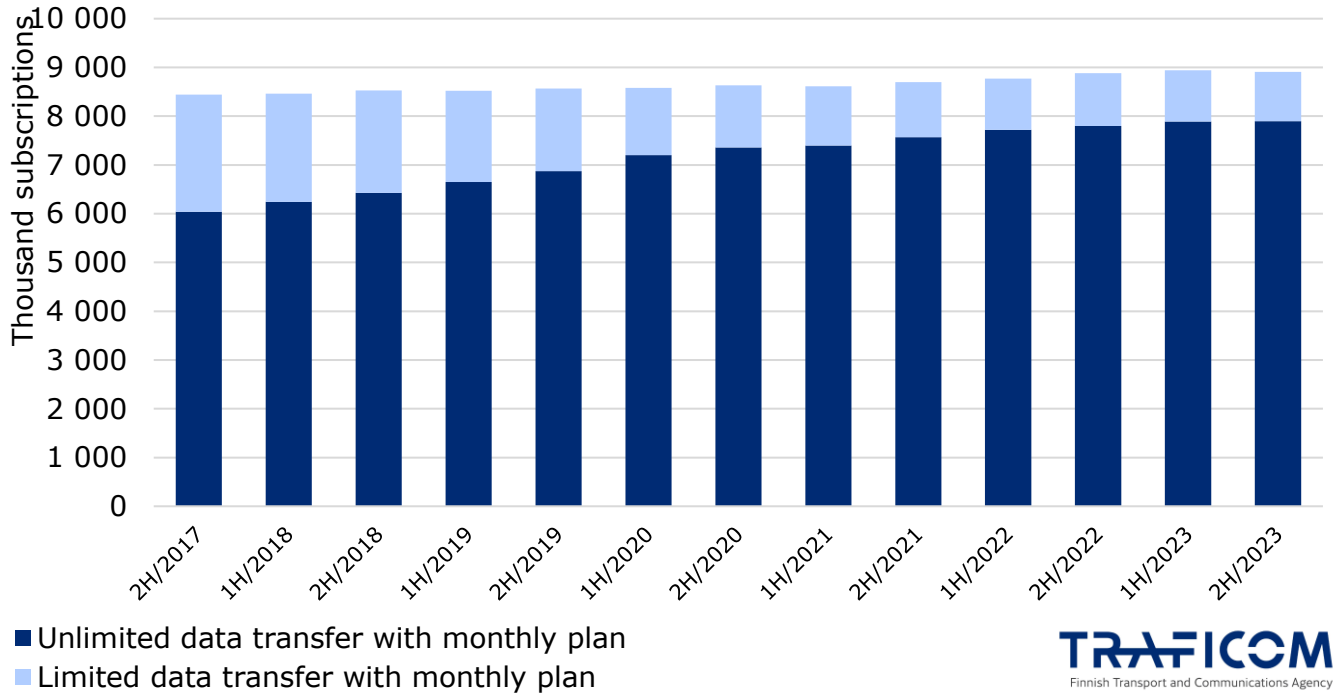


*Figure 1. Mobile data transfer subscriptions*

In the second half of 2023, an average of 73 GB of mobile data was transferred per person in Finland each month. Data-only subscribers (mobile broadband subscriptions) transferred an average of 113 GB of data per month. Subscribers with call and data plans transferred 25 GB of data in the same period. However, the use of

mobile data is not evenly distributed among users – a small share of users account for the majority of the mobile data transferred. The median data transfer volume of call and data subscriptions was 7 GB per month and the median volume of mobile broadband subscriptions was 34 GB per month. These data transfer volumes do not include FWA (Fixed Wireless Access) data transfers in the mobile network as defined by Traficom. Instead, this data transfer is included in the data transfer volume of the fixed network, as these connections are considered fixed-line subscriptions.

These high data transfer volumes can be explained partly by the availability and use of unlimited data plans and partly by the fact that in almost half of all Finnish households mobile broadband is the only form of internet access. In this case, access to the internet is implemented in the form of a mobile broadband via a modem or by sharing the connection of a mobile device to other users in the household.

Because of the lack of data limitations, zero rating does not exist in Finland.

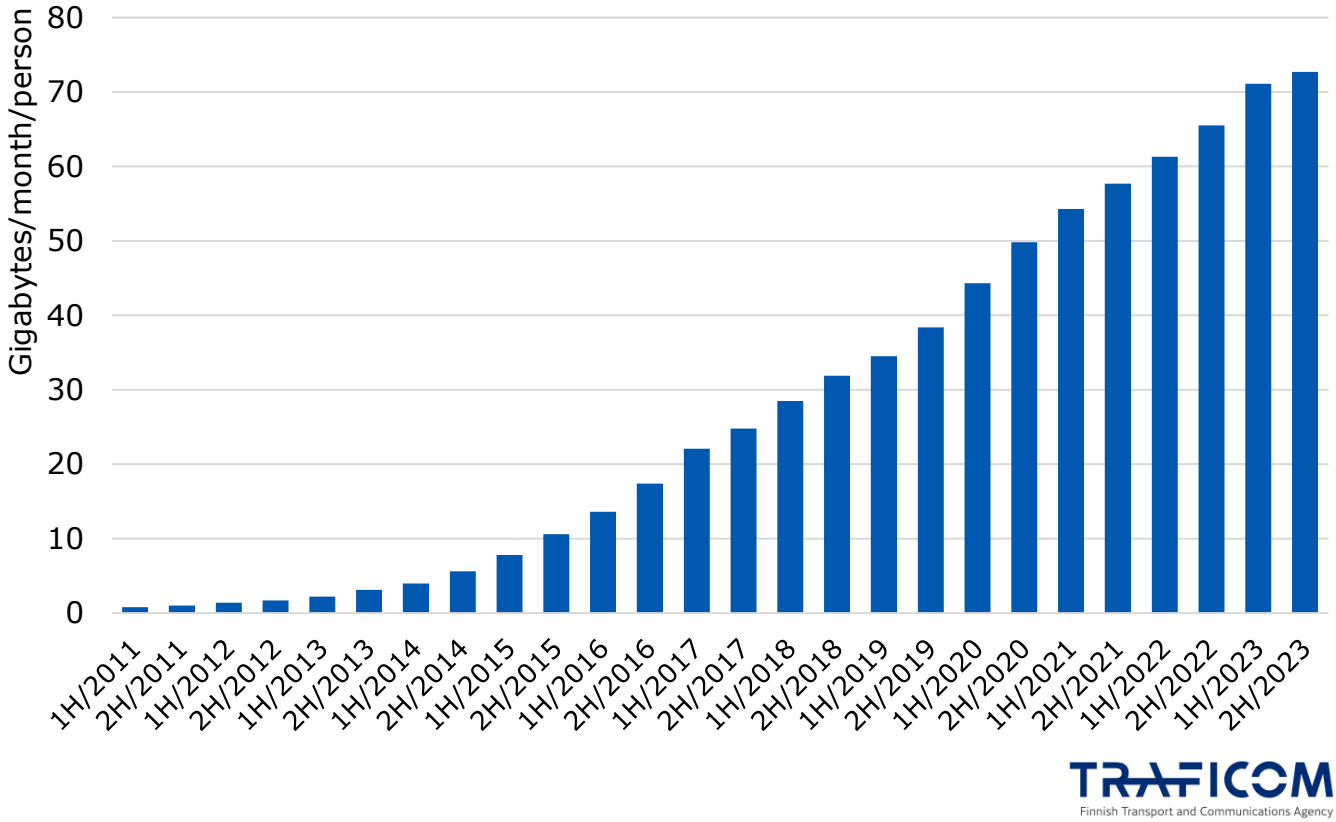


*Figure 2. Volume of data transferred in mobile networks per person in Finland*

## 6.2 Fixed network

The total number of fixed-line subscriptions has seen rather moderate development, but download speeds in particular have increased consistently. At the end of 2023, 53 per cent of fixed broadband subscriptions offered a download speed of 100 Mbps or higher, while 99 per cent had a download speed of at least 10 Mbps.

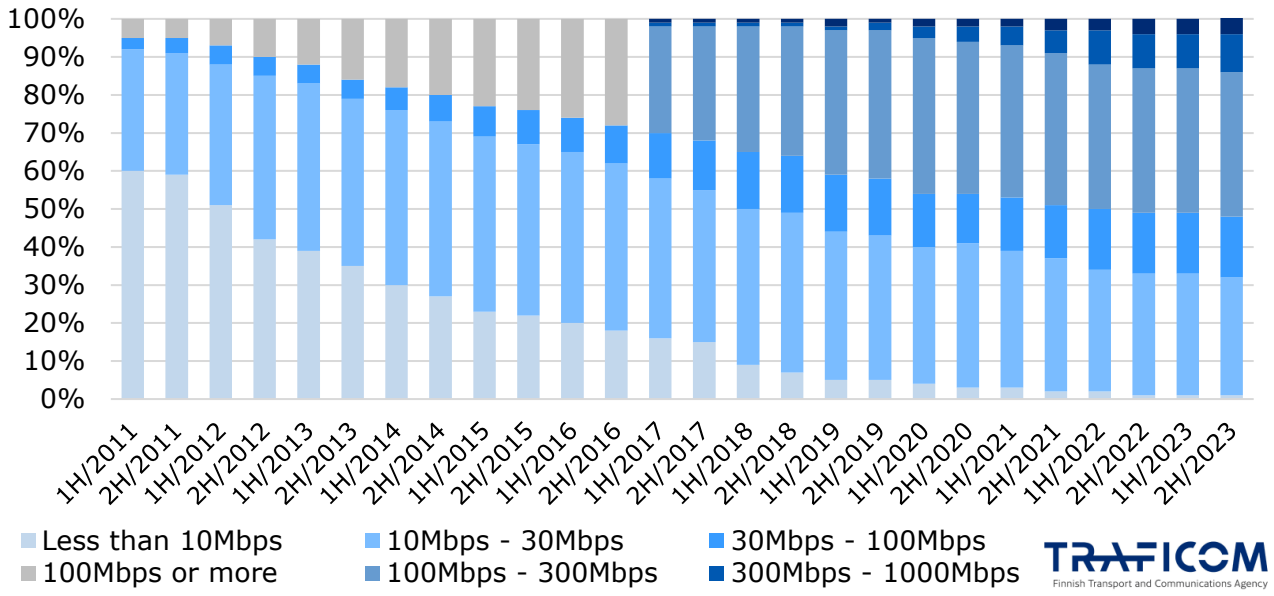


*Figure 3. Fixed-line broadband subscriptions by connection speed*

At the end of September 2023, more than 2.3 million households in Finland had access to fixed broadband with a download speed of 30 Mbps or higher[16]. This represented 81 per cent of all Finnish households.

At the end of September 2023, about 2 million households had access to fixed broadband with a download speed of 100 Mbps or higher. This represents 78 per cent of all Finnish households. A broadband connection with a download speed of 1 Gbps was available for 65 per cent of households.

In recent years, the availability of high-speed fixed access has grown more rapidly than before as new operators are entering the market, telecommunications companies are making investments, and demand for it is increasing. Furthermore, the fixed subscriptions offered do not come with pre-set limitations on data transfer volumes.

Please note that the above figures represent download speeds and that the corresponding upload speeds are somewhat lower. That being said, nearly all connections offering download speeds of 100 Mbps also offered upload speeds of at least 100 Mbps. Upload speeds will become more significant as cloud services and bidirectional streaming continue to gain in popularity.

Data transfer volumes were slightly higher in the fixed network than in mobile networks. During the second half of 2023, 100 GB of data was transferred per person in the fixed network. The data transfer volume per subscription was 283 GB per month. The major difference in comparison to the volume of mobile data transferred per subscription can most likely be partly explained by the use of corporate subscriptions: even in the fixed network, some users account for a larger share of the data transfer volume than average users. No median figures are available on data transfer volumes in the fixed network.

[16] Over the years, retroactive corrections have been made to access data, which is why not all data is equally comparable for the period. Comparable time series can be found on the Traficom website: https://tieto.traficom.fi/en/statistics/fixed-broadband-availability

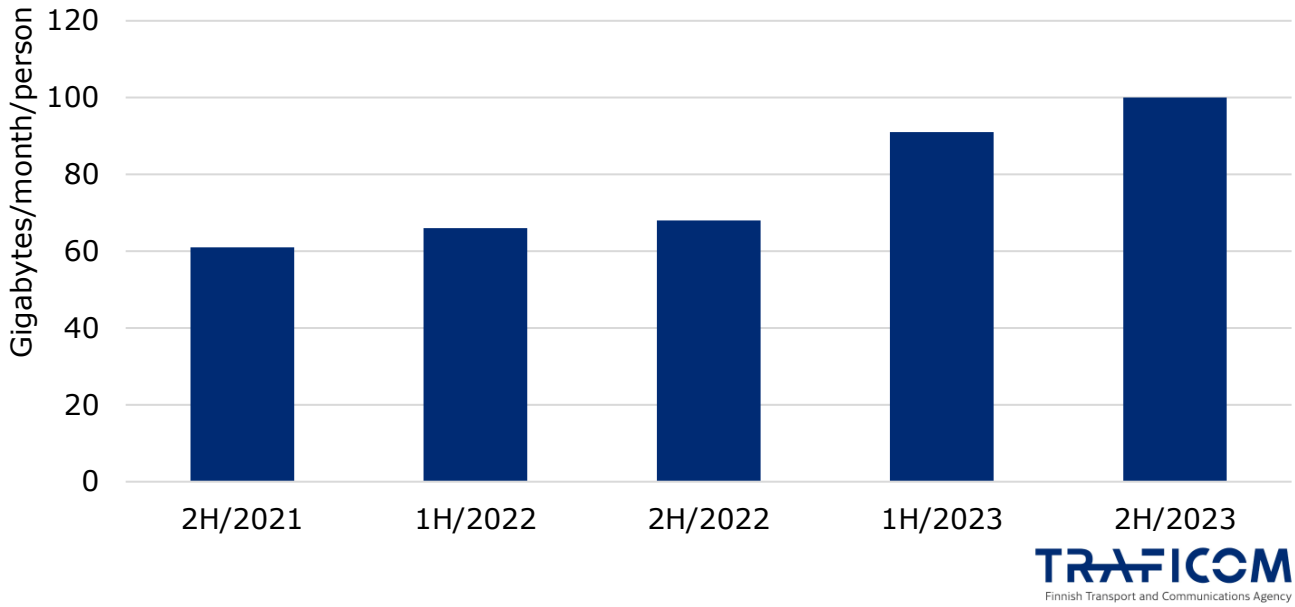


*Figure 4. Volume of data transferred in fixed communications networks per person in Finland*

# 7 Stakeholder cooperation and other activities

During the period covered by this report, Traficom met with several industry actors, including ministries, telecommunications operators and service providers. During the period, topics that raised discussion in particular included interpretations of the sanctions that the EU has imposed against the broadcasting and distribution of content by Russian media outlets, the European Commission White Paper published for consultation and the reform of IP interconnection rules (for more details, please see sections 3.1 and 3.2 above).

As in the period covered by the previous report, Traficom took active part in the work of the BEREC Open Internet working group, including in the context of updating the guidelines on interpreting the Open Internet Regulation and contributing to the aforementioned discussions on sanctions and IP interconnection rules.

In addition to the above, Traficom continued to engage in cooperation with other authorities and stakeholders, including in the context of the Digirail project and mobile coverage on the rail network, and to provide advisory services both by responding to direct enquiries from citizens and actively engaging in discussions on social media and other forums. During the period covered by this report, Traficom also engaged in discussions with a university researcher on, for example, the issue of removing online material or restricting access to it.

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