



PÓST- OG FJARSKIPTASTOFNUN

Draft Decision

Míla conditions and wholesale tariff for IP telephone service provided at a fixed location on Access Option 3 (Market 5/2008)

xx December 2017

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1 Introduction

Míla ehf. (Míla) tariff for IP telephone service provided at a fixed location (VoIP) on Access Option 3, together with amendments to Míla's reference offer for bitstream access relating to the above service category, here under discussion, is based on the obligations imposed on the company with the Decision of the Post and Telecom Administration (PTA) no. 21/2014 on the designation of a company with significant market power and on the imposition of obligations on the wholesale market for access to local loops and bitstream, dated 13 August 2014.

The planned PTA Decision on wholesale tariff for VoIP on Access Option 3 was sent for national consultation on 20 October and this consultation was open until 9 November. On last 27 October, the PTA opened a national consultation on its draft Decision for planned amendments to Míla's reference offer for bitstream services as regards the conditions for the above service category. That consultation lasted until 9 November as well. No comments were received in relation to the above national consultations. The PTA have decided to merge the two above cases, since they are so closely related.

The PTA has endorsed the Míla cost analysis on market 5/2008 for Míla bitstream service, including VoIP on Access Option 1 which is also based on PTA Decision no. 21/2014. The PTA refers in this connection to the Administration's Decision no. 6/2017, dated 30 May 2017. Míla has however not previously offered IP telephone service provided at a fixed location on Access Option 3, which means that this is a new service.

The following Sections cover the legal grounds, methodology and calculations that led to the PTA conclusion. The text of the Draft Decision describes the intended PTA position which can be subject to amendment until the final Decision is made, among other things as a result of comments from stakeholders. The wording of the Draft should be read with this in mind.

1.1 PTA Decision no. 21/2014

With the PTA Decision no. 21/2014, dated 13 August 2014, the PTA designated Míla as a company with significant market power on the market for wholesale network infrastructure access at a fixed location (Market 4/2008) and on the market for wholesale broadband access (Market 5/2008).

With the authority in Article 28 of the Electronic Communications Act the PTA imposed an obligation on Míla for bitstream access. Míla should inter alia offer bitstream access with specific quality definitions, amongst others access that use little bandwidth but makes high-quality requirements for VoIP telephone service.

With the authority in Article 29 of the Electronic Communications Act the PTA imposed an obligation on Míla for transparency in wholesale sales and access to bitstream. Míla should publish a reference offer for bitstream access, for example on technical descriptions and tariff, which should be maintained and updated as needed.

With the authority in Article 32 of the Electronic Communications Act the PTA imposed an obligation on Míla for price control for bitstream access with DSL technology (such as according to VDSL and ADSL standards). Míla was to submit its wholesale tariff for access to bitstream at various locations on the network in accordance with specified Access Options to the Administration for endorsement, where variations in bandwidth and quality are also taken into consideration.

In the Decision, it was stated that it was to be ensured at any given time that the Míla tariff included all the wholesale bitstream service on offer from Míla to related companies, including

multicast that enables IPTV service and the technology that enables VoIP service. Furthermore, Míla was obliged to review the product offer in its tariff in step with market requirements at any given time and if reasonable requests were received in accordance with the access obligation. Míla was to publish its wholesale tariff and conditions for all its DSL bitstream services provided through copper local loops. All additions and amendments to the tariff were to be endorsed in advance by the PTA and were not to come into force until such an endorsement had been provided.

In the Míla cost analysis, when pricing varying services, an assessment of cost should be made on the share of Internet service, telephone service (VoIP) and the distribution of video content (IPTV/VoD) in the use of Míla's bitstream system. This should be done on the basis of the number and size of connections, traffic volume and varying requirements for priority and quality control (Quality of Service - QoS) in Míla's systems.

It was specified in the Decision that Míla should prepare a separate tariff for priority and quality controlled bitstream transit for IP telephone service (VoIP). The tariff should relate to Access Options 1-3 to the extent technically possible and in the main should use the following structure for the tariff.

- a) Access with large bandwidth without quality definitions (Best Effort) for general Internet service.
- b) Access with large bandwidth with high quality requirements (QoS) for IP television distribution (IPTV) with multicast technology.
- c) Access with large bandwidth with high quality requirements (QoS) for IP video rental (VoD) with interactive bitstream transmission.
- d) Access that uses little bandwidth, but which makes high-quality requirements for IP fixed telephony service (VoIP).

The above delivery of bitstream through copper local loops (DSL technology) with varying quality control and performance should be on offer at different locations on the network in accordance with Access Options 1-3 in the following manner:

1. In DSLAM or equivalent equipment at the place where the copper local loops connect to the telephone exchange distribution frame, street cabinet or other equipment space (Option 1).
2. By ATM/IP transmission in the Míla backbone network, i.e. transmission of signals from DSLAM to the connection point of another electronic communications company with the ATM/IP trunk line network (Option 2).
3. After transmission with ATM/IP on the Síminn backbone network to the connection point of another electronic communications company with the previously mentioned network (Option 3).

In accordance with Article 32 of the Electronic Communications Act, the tariff for the DSL bitstream services in question should be cost-oriented.

When implementing its cost analysis Míla shall base its methodology on Chapter IV of Regulation no. 564/2011 on bookkeeping and cost analysis in the operations of electronic communications companies, such as on evaluation of operational assets, useful life of assets and cost of capital. Account should be taken of PTA instructions on varying Access Options and of varying bandwidths and quality control.

It is stated in Decision no. 21/2014 that the Míla cost analysis shall among other things, cover access with DSL technology according to Access Options 1-3. It is also specifically stated that the price for IP telephone service provided at a fixed location (VoIP) shall be calculated.

1.2 Facts of the case

On 31 August 2015, Míla submitted cost analysis for xDSL bitstream access, along with specifications of multicast, unicast and IP telephone service provided at a fixed location on Access Option 1. The conclusion of the Míla cost analysis was published in PTA Decision no. 6/2017, dated 30 May 2017. This cost analysis did not include analysis of cost for IP telephone service provided at a fixed location on Access Option 3 as Míla has up to this point in time only provided this service on Access Option 1. In the Míla analysis dated 31 August 2015 it was stated that very few end users were using IP voice telephony service over Míla copper lines. In the Míla analysis, revised with information from 2016 bookkeeping, it was however stated that income from VoIP had increased significantly from 2014. It has subsequently been revealed by Síminn that the company intends to decommission its PSTN system. In the PTA statistics report it is stated that VoIP service has increased significantly over the past 2 years. With increased roll-out of fibre-optic and the planned decommissioning of Síminn PSTN service, continued increase in VoIP service is envisaged in the near future.

In 2016, the PTA completed analysis of the markets for retail access to the public telephone network provided at a fixed location and for wholesale origination of telephone calls in public telephone networks provided at a fixed location (Markets 1/2008 and 2/2008), and the conclusion of the analysis was published in the Administration's Decision no. 23/2016, dated 23 December 2016.

In the market analysis, it is stated that entry barriers had decreased significantly in recent years on markets 1/2008 and 2/2008, and that they were no longer high. It was easier now than before to develop facilities to provide access to a fixed telephony network with the advent of VoIP telephone technology and with the steadily increasing distribution of fibre-optic connections. The large and growing distribution of IP networks such as fibre-optic and VDSL over copper had meant that most homes and workplaces in the country have access to high speed connections which meant in turn the existence of potential transit routes for VoIP to almost all users of fixed telephony services.

It was stated in the analysis that it was possible to provide VoIP service at any location in the country based on leased bitstream connections which meant that the investment requirement of a new service provider on the fixed telephony market is less than before. The difference between the position held by Síminn and that of other companies resulting from the distribution of Síminn PSTN telephone exchanges, had a steadily decreasing impact as new parties would in future emphasise VoIP. In the opinion of the PTA, increased and improved access to wholesale service resulting from obligations on the Síminn subsidiary, Míla, on Markets 4/2008 and 5/2008 and the development of fibre-optic systems of Gagnaveita Reykjavíkur in the Capital City Area and in many regions in the country would further diminish entry barriers to fixed telephony markets.

In the opinion of the PTA, it is an important factor in levelling the playing field for parties to the fixed telephony market, that IP voice telephony service should be available on Access Option 3 with Míla and this is effectively a prerequisite for being able to lift obligations from Síminn on the fixed line telephony market.

In an email from Míla dated 24 March 2017, it was stated that Míla was looking at a potential technical design for VoIP on Access Option 3 and that subsequently an appendix would be

prepared to the Míla reference offer for bitstream service with this service and with prices. It was stated there that no costs for bandwidth or for operations for transit were included in the prices for VoIP on Access Option 1. Síminn would need to be responsible for the transit in the same way as for the Internet on Access Option 3 and this would be added to the costs which would be mostly Síminn costs.

With an email dated 6 June 2017, the PTA requested that Míla submit a cost analysis for VoIP on Access Option 3 at the earliest opportunity.

On 11 July, Míla submitted cost analysis for VoIP on Access Option 3.

In a PTA email from 18 July, the PTA requested further explanations of Síminn costs for IP transit, setup and operation of IP service in the light of the fact that the analysis was to a large extent based on Síminn's tariff. The PTA also requested information on the division of service items between Síminn and Míla and on the Míla criteria for the number of customers in VoIP service.

In an email from Míla dated 18 August 2017, Míla further explained the division of service items between Síminn and Míla. Further justification was also provided for the Míla criteria regarding the number of customers in VoIP service. There will be more detailed discussion on these issues in Section 2 here below.

In an email from Míla dated 7 September 2017, Míla submitted the Síminn explanations on Síminn costs for IP transmission, setup and operation of IP service, see discussion in Section 2 here below.

In a PTA email to Míla, dated 7 September 2007, the PTA raised objections to the estimated number of connections, particularly that in the criteria allowances were made for [...]. The PTA also requested information on the planned arrangement for instances where Míla customers added or changed a connection.

In an email from Míla dated 14 September 2017. Míla states that the company considers [...]. There will be more detailed discussion on Míla arguments for the estimated number in Section 2 here below. Míla stated that it was intended that the customers themselves would add new connections through the Míla service web.

On last 26 October, the PTA received a draft amendment to Míla's reference offer for bitstream as regards the conditions for the said access for IP telephone service provided at a fixed location (VoIP) on Access Option 3.

2 Amendments to Mila's reference offer for bitstream access

The PTA endorses the following amendments to Appendix 5 of Mila's reference offer for bitstream services as regards the conditions for IP telephone service provided at a fixed location (VoIP) on Access Option 3. In said Appendix will be added an Article number 6.2 which will be worded as follows:

Fixed line telephony service (VoIP) on Access Option 3

Fixed line telephony service (VoIP), on Access Option 3 is offered on all Ethernet compatible Mila DSLAM equipment and is provided through ADSL/ADSL 2+, VDSL2 and GPON connections. A service is on offer to set up a maximum of two VoIP channels on each connection.

Fixed line telephony service is set up and delivered to a service purchaser on one VLAN. The service is defined in the highest quality category (priority 5) and therefore enjoys priority over other services (Internet and TV). The service purchaser can utilise existing connections with IP/MPLS for transit of the service. See more detailed definitions of A3 interconnections in Appendix 5 in the Mila Reference Offer for Market 5.

Authorised communications protocols for fixed line telephony service on A3 are DHCP, SIP and UDP:

- DHCP (Dynamic Host Configuration Protocol)
- SIP (Session Initiation Protocol)
- UDP (User Datagram Protocol)

User equipment must tag all frames that it sends in accordance with Table 1. In the download direction, the frames arrive tagged from the backbone network.

Service	ATM channels/VLAN	Priority
ADSL/ADSL2+	9/48	5
VDSL2	5	5
GPON	5	5

Table 1.

In many instances, SIP functionality is built into user equipment which can be used for VoIP fixed line telephony. The service purchaser can utilise a special telephone port on endpoint equipment, regardless of whether this is an xDSL router or GPON ONT. It is also possible to connect an IP telephone handset or ATA box directly to the Ethernet port on the endpoint equipment.

A POTS port is also available on Mila ONT equipment which supports basic fixed line telephony service. All requests for functionality in excess of basic service through the service purchaser's telephone exchange portal will be scrutinised and the cost assessed. If Mila agrees to developing the service then this can entail costs that the service purchaser must pay for.

Further information on the setup of user equipment can be found in Appendix 2 in the Mila Reference Offer for Market 5.

The service purchaser must provide an IP address for its customers' endpoint equipment which means that the purchaser must acquire a DHCP server for this purpose. The service purchaser must also use its own telephone exchange portal to provide the service, and all management related to this is the responsibility of the service purchase.

3 Míla cost analysis

The following was stated in the Míla cost analysis dated 11 July 2017:

“With its Decision no.6/2017, the PTA decided the price for VoIP on Access Option 1. The price is ISK 55.85 per month per connection.

The price for VoIP on Access Option 3 is in reality VoIP on Access Option 1 with the addition of transmission on the Síminn IP network, where Síminn has Access Option 1. In addition to this there are some costs for setup of the service and its maintenance.

As stated in the cost analysis for bitstream access, Síminn uses Access Option 3 at various locations in the countryside. In those instances, Míla Access Network has leased connections for Access Option 3. These are small locations and it is not at all clear the extent to which Míla customers will wish to purchase this service at these locations. Therefore, for the time being this cost will not be allowed for in the cost analysis.

Míla tariff for IP transmission for VoIP is as follows:

Number	Unit price
0 - 2,499.....	55.0
2,500 - 4,999.....	47.9
5,000 - 7,499.....	44.2
7,500 -	41.7

	Initial cost
Installation of VoIP (installed for 5 parties)	2,400,000
Installation for new parties in VoIP service.....	240,000
Cost per party per month.....	30,000

The tariff is structured such that if the number of connections is fewer than 2,500 then the price per connection is ISK 55 per month and for connections in excess of 2,499 but fewer than 5,000 the price is ISK 47.9, e.g. if the number of users is 3,000 then payment is made for $55 \times 2,499 + 47.9 \times 501$.

The setup charge for enabling the service is ISK 2,400,000 were the cost is reckoned according to estimated labour from Síminn for pre-configuration of 5 VoIP ISAM facing setups where the amount of work required to pre-configure 5 parties is the same as pre-configuring for 1 party.

Síminn also allows for labour required for connecting each individual customer into the system. Estimated cost is ISK 240,000.

In an email from Míla dated 18 August 2017, Míla states with respect to the division of service items between Síminn and Míla that because Síminn operates the Míla backbone network for Access Option 3 (whether this is for Internet, IPTV og VoIP) Míla must purchase access to the Síminn IP network. This access involves installing a service and maintenance of the service on the Síminn IP network. There is therefore no fundamental difference between the service, Míla purchases from Síminn to provide VoIP on Access Option 3, except that slightly more service is purchased for Internet on Access Option 3 as in that instance Míla is also purchasing access to the Síminn BRAS system. The BRAS service is not required for VoIP and instead VLAN is used per service per service provider. Míla is on the other hand responsible for setup, maintenance and operation on its systems, i.e. DSLAM and service access switches and for the

underlying leased line which Síminn uses in its IP system for the backbone network of the IP system.

A more detailed explanation of Síminn costs accompanied an email from Míla dated 7 September 2016. It contained the following breakdown of costs for setup of VoIP:

- Preparation and design – [...]
- Installation of service for 5 parties (ISAM facing) – [...]
- Configuration (200 x L3 interface, configuration of L3VPN at PE, L2 config to ISAM), about [...]

The total cost for setup of VoIP for 5 service parties is therefore approximately ISK 2,400,000.

Síminn estimates [...] hours of work to connect service parties who decide to use VoIP, and according to this the estimated cost for each party is approximately ISK 240,000.

Síminn assumes [...] hours of work per month, which is about ISK 30,000 for each service provider in VoIP on Access Option 3 independent of the number of end users. Assumptions are made here, e.g. for some malfunctions, for monitoring and management of configurations for each service provider.

[...]

Síminn also allows for opex of ISK 55/month for each end user (each connection). It was stated that this charge included all other costs for operation of the system e.g. work on malfunctions related to users, bandwidth, cost of equipment, software licences and other such costs for the Síminn IP network that could reasonably require participation by each service. According to Síminn these costs are ISK 137,500 (55*2,500) for the first 2,500 users, which is approximately [...] % of the opex of the Síminn IP network.

Síminn pointed out that the operation of the IP/MPLS network did not only involve costs for bandwidth and that it was therefore normal that service using small bandwidth, which is on offer across the whole country, participate in costs, independent of bandwidth. An example of costs independent of bandwidth are costs for work on the system, for hosting of equipment, for service agreements, introduction of service and design of systems.

In the Míla cost analysis dated 11 July 2017, the following was stated with respect to Míla calculations:

“Calculation of number of connections in VoIP on A3 and number of customers:

The number of connections on A3 in May 2017 are [...]. Then there are some customers who have fewer than 150 connections and Míla believes that these customers will not purchase VoIP on A3 from Míla. [...]

As one can see in the table here above, Míla estimates the number of VoIP on A3 at [...].

Míla also allows for customers being [...]. Other companies will move their connections to these [...].”

In an email dated 18 August 2017, Míla stated with respect to criteria for the number of customers in VoIP service that fixed line telephony service is a rather more complicated service to setup and operate than Internet service, yet today it gives much less revenue. In order to operate such a service, one needs a VoIP portal and knowledge of operating such systems. The reality is that many Internet service providers are purchasing such service in wholesale from other electronic communications companies or simply do not provide the service. Míla

therefore believes that most electronic communications companies will provide the service through parties that purchase the service from Míla.

In an email from Míla dated 14 September 2017, it is stated that Míla considers that [...]. Míla also points out that Míla is actually allowing for [...] of all connections that Míla believes will be on Access Option 3, moving to VoIP, [...]. The number of VoIP on Access Option 1 today is about [...] of the total number of connections on Access Option 1. This increase has taken place during the last 3 years. This analysis allows for [...]. In Míla's opinion, this is rather over than underestimated as transfer to VoIP will take some considerable time. Míla points out that Míla tariffs are reviewed regularly and that it is normal for the tariff to be reviewed when experience has been gained of the service.

In the Míla cost analysis dated 11 July 2017, the following is stated about the Míla calculations of setup charge and monthly charge for each connection:

"According to the Síminn tariff, the setup charge for 5 parties is ISK 2,400,000. Míla however allows for a maximum of [...] using VoIP on A3, [...]. In addition to this Míla must pay Síminn ISK 240,000 for setup for each customer.

In in addition to this cost for Síminn labour for the setup of VoIP in A3, there are also Míla costs. Míla must install VLAN for each customer in each ISAM and configure the equipment. In addition to this, tests need to be made with the customer to verify that the setup is working. Then the customer and connections must be registered in the service network, Dísá (information system for bitstream service) and NMS. Míla estimates this work at ISK 1,530,160.

	Hours	Total
Setup VLAN for each ISP on each ISAM and config ISAM equipment	16	255,360
Tests and communications with ISP.....	40	638,400
Register in Dísá, service web and portal.....	40	638,400
		1,532,160

Setup of VLAN, configurations and tests must be made with each customer and the work on setting up the service on the service web, Dísá, and service portal are costs that are independent of the number of customers.

The setup charge is calculated as follows:

	Total cost	Number	Cost per customer
Setup costs from Síminn, setup of the service.....	[...]	[...]	[...]
Setup costs from Síminn, per customer.....	[...]	1	[...]
Setup costs from Míla, setup of the service.....	[...]	[...]	[...]
Setup costs from Míla, per customer.....	[...]	1	[...]
	4,172,160		2,146,560

Total costs of setting up the first customer is estimated at ISK 4,172,160 but if one allows for [...] customers, the cost is ISK 2,146,560 per customer. Míla allows for collecting half of the setup costs in monthly charges per connection.

The setup charge is thus ISK 1,073,280.

Calculation of monthly charge:

As stated previously, the estimated number of connections is [...]. According to this the monthly charge for the transit layer on A3 is ISK 55, according to Síminn tariff.

In addition to this, payment has to be made for VoIP in DSLAM, ISK 55.85 as per the tariff for VoIP in A1.

Other Míla operating costs must also be allowed for in this service. One can for example mention customer services, fault identification, repairs and maintenance of IT equipment. Míla allows for 100 hours per annum for these operations, which amounts to ISK 1,596,000. In addition to these costs, allowance is made for 50% of Míla setup costs per customer being divided over the 5 year useful life period which is ISK 261,763 per annum.

Síminn collects, ISK 30,000 per month for each service provider for opex which amounts to ISK 360 per annum. given [...] the annual total costs for Síminn services are [...].

According to the above, the total cost for [...] are:

Unit price	
Míla opex.....	[...]
Operational costs from Síminn.....	[...]
Share in setup costs of 3 customers.....	[...]
Costs for transit.....	[...]
VoIP in A1.....	[...]
	[...]
Number of units.....	[...]
Price per unit per month.....	233

Tariff for VoIP in A3

According to the above the tariff for VoIP in A3 will be as follows:

	Price Ex VAT.
Unit price per month.....	233
Setup charge.....	1,073,280
"	

4 PTA Conclusion as regards Míla's cost analysis

As stated by Míla, Míla's costs for VoIP on Access Option A3 are divided between the costs of purchasing service from Síminn on the one hand and Míla internal costs on the other.

4.1 Síminn tariff

The service purchased by Míla from Síminn, is on the one hand, transmission through the Síminn IP network and on the other hand, setup and operation of the service by Síminn.

Price for transmission of VOIP telephone number through Síminn IP/MPLS

Number of connections	Unit price
0 - 2,499	ISK 55.0
2,500 - 4,999	ISK 47.9
5,000 - 7,499	ISK 44.2
7,500 -	ISK 41.7

Price for Síminn setup and operation

Service	Rate
Setup of VoIP (setup for 5 parties)	ISK 2,400,000
Installation for new parties in VoIP service	ISK 240,000
Cost per party per month	ISK 30,000

It was stated in an email from Míla dated 18 August 2017 that the access purchased by Míla to the Síminn IP network required the setup of the service and its maintenance on the Síminn IP network. There is no fundamental difference between the service Míla purchases from Síminn to provide VoIP on Access Option 3 and Internet service with the exception that slightly more service is purchased for Internet on Access Option 3 as in that instance Míla is also purchasing access to the Síminn BRAS system. The BRAS service is not required for VoIP and instead VLAN is used per service per service provider. Míla is on the other hand, responsible for setup, maintenance and operation of its own systems, i.e. DSLAM and service access switches along with the underlying leased line which Síminn uses for its IP system for the backbone network of the IP system.

The Síminn setup of VOIP allows for the setup being for five electronic communications companies. Síminn states that this is the minimum number which in turn means that the work is the same regardless of whether there is one or five parties. Síminn estimates [...] hours work for this item. In addition to this Síminn expect that it will take [...] hours to connect each service provider at the start and [...] additional hours in operation for each party per annum.

4.2 Míla internal costs

In addition to the Síminn work, Míla must work in its own systems. On the one hand, there are items requiring work for each electronic communications company, and there is the setup of VLAN, configurations, tests and communications and related communications with the electronic communications company in question. Míla estimates that this work requires a total of 56 hours. Then there is the setup of the service on the Dísa service web and portal which is

independent of the number of electronic communications companies that purchase the service. Míla estimates that this work requires a total of 40 hours.

The following table shows the number of hours estimated for each item:

Task	Hours		Total
Set up VLAN for each ISP on each ISAM and configure ISAM equipment	16	ISK	255,360
Tests and communications with ISP	40	ISK	638,400
Register in Dísa, service web and portal	40	ISK	638,400
		ISK	1,532,160

Míla estimates 100 hours per annum in operation costs which constitutes work related to service with customers, fault identification, repairs and maintenance of equipment. In addition, there is the cost for VoIP on Access Option 1 which is ISK 55.85 per month for each connection.

Míla costs are based on estimated hours of work for each task and their hourly rate is ISK 15,960. The PTA raises no objections to the hourly rate used by Míla when one considers the description of the task details for the setup and maintenance on which the service is based.

As this is a new service it is difficult to decide precisely the cost of introducing the service. The PTA therefore considers it necessary for the tariff to be reviewed when information is available on real costs.

4.3 Number of electronic communications companies, and connections

As this is a new product, the future demand for this service has not been established, and there are several unforeseen factors involved.

PSTN service has been on the decline in recent years while at the same time there has recently been a considerable increase in VoIP connections, particularly through fibre-optic, but also through DSL. Against this there is the fact that telephone connections provided at a fixed location (home phones) have decreased, but this development is much slower.

Míla estimates the number of VoIP connections on the basis of Internet connections on Access Option 3. Míla estimates that in [...] of cases, VoIP will be adopted when offered to selected companies. [...]

In a Míla email dated 7 September 2017, the PTA objects to the fact that the criteria for the number of VoIP connections allowed for [...]. If one considers the proportion of Internet connections on Access Option 1, as a proportion of the total number of VDSL/ADSL connections, they were [...] in December 2016. In the light of this fact and of what has been previously stated, the PTA can accept the Míla criteria for [...]. According to this the conclusion is that the estimated total number of connections on Access Option 3 will be [...].

Míla allows for [...] VoIP connections on Access Option 3, which is about [...] of estimated number of connections on Access Option 3 [...]. Míla states that today the number of VoIP on Access Option 1 is close to [...] of the total number of connections on Access Option 1. This proportion has been decreasing recently and one can allow for this trend to continue as VoIP appears to be the successor of PSTN fixed line telephony.

In the light of the above the PTA raises no objections to [...] take-up at the beginning of the service, i.e. that the calculation be based on [...] VoIP connections on Access Option 3.

Míla assumes that [...] electronic communications companies will adopt this service. Míla stated that VoIP service was rather more complicated service to setup and operate than Internet service, yet gave much less revenue. In order to operate such a service, one needed a VoIP

portal and knowledge of operating such systems. Míla assumes that smaller electronic communications companies will purchase this service from other electronic communications companies.

The PTA raises no objections to this assumption by Míla for the time being. The PTA assumes that real figures will be available for the next revision of the tariff for this service, both for number of electronic communications companies and number of connections. It is likely that the number of connections and of electronic communications companies will be to some extent dependent on each other as starting this service entails some costs. In order to achieve minimum efficiency, an electronic communications company that intends to adopt this service must have a specific minimum number of customers.

4.4 Calculations of setup charge and monthly charge

The costs for both Síminn and Míla are divided between setup costs and opex. In addition to this the Síminn cost for transit is about ISK 55/month for each connection. This charge is for the first 2,499 connections, and as stated here above the model allows for [...] connections. In addition, ISK 55.85/month must be paid for each VoIP connection in Access Option 1, according to the current Míla tariff.

Setup cost

Calculations of setup costs are based on the assumption that 3 electronic communications companies will purchase the service. Setup costs are specified in the following table:

Cost items	Cost 1 customer	Cost [...] customers
Setup costs from Síminn, setup of the service	[...]	[...]
Setup costs from Síminn for customer	[...]	[...]
Setup costs from Míla, setup of the service	[...]	[...]
Setup costs from Míla for customer	[...]	[...]
	[...]	[...]
Setup cost per customer	ISK 4,172,160	ISK 2,146,560

As shown in the table here above, part of the costs is independent of the number of customers which means that Míla costs for one customer are considerably higher per customer than if one allows for [...] customers.

The Míla calculation allows for half of the setup costs being collected with the setup charge, i.e. ISK 1,073,280, assuming [...] customers. Míla calculates an annual charge from the remainder of setup costs, collected in the monthly charge which is divided by the number of connections. The calculations of the annual charge are based on 5 year useful life of the investment. The PTA raises no objections to the useful life of the investment, and refers in this connection to the Frontier Economics report from 2014¹.

Monthly charge

¹ Input data and intermediate calculations; a report prepared for ILR, Frontier Economics, March 2014, p. 29. (<https://assets.ilr.lu/telecom/Documents/ILRLU-1461723625-133.pdf>)

Síminn collects a monthly charge for each electronic communications company in this service, which Míla calculates into the monthly charge for each connection on the basis of [...] customers and [...] connections. Míla allows for 100 hours per annum in opex for this service.

The following table shows the calculations of the monthly charge:

Cost items	
Míla opex	[...]
Opex from Síminn	[...]
Share in setup costs	[...]
Síminn costs for transit	[...]
VoIP on Access Option 1	[...]
Total cost per annum:	[...]
Number of connections	[...]
Price per connection per month	ISK 233

According to the above the setup costs for an electronic communications company is ISK 1,073,280 and the monthly cost is ISK 233 per connection. A setup charge is not assumed for new connections as it has been stated by Míla that the electronic communications company will make all changes to connections on the service web. This will not entail work by Síminn or Míla, as part of the setup costs is the work provided in installing the service.

The structure of the tariff means that the number of connections held by an electronic communications company will affect the average cost for each connection, i.e. when the setup charge is divided by the number of connections. The following table shows calculations of the average monthly price by number of connections held by an electronic communications company where the useful life of a connection (average length of business relationship) is 3 years on the one hand and 5 years on the other hand.

Average monthly price of connection with electronic communications company

Number of connections	Average life of connection	
	3 years	5 years
50	ISK 829	ISK 591
100	ISK 531	ISK 412
150	ISK 432	ISK 352
200	ISK 382	ISK 322
500	ISK 293	ISK 269
750	ISK 273	ISK 257
1,000	ISK 263	ISK 251
1,250	ISK 257	ISK 247
1,500	ISK 253	ISK 245
2,000	ISK 248	ISK 242

For the sake of comparison, the Síminn tariff for SB-CPS² is ISK 1,937/month for 0-999 connections, ISK 1,856/month for 1,000-1,999 connections and ISK 1,838/month for 2,000-2,999 connections. Included in the above specified SB-CPS prices are the local loop charge of ISK 1,406/month and the monthly price for e.g. 0-999 connections is therefore ISK 531 without the local loop charge. In addition to this Síminn collects, ISK 4,464 for each new connection and a minute charge for call origination, which is ISK 0.50/minute plus a payment for termination in the relevant network³.

The amount of the setup charge means that it is not economic for a company with very few connections to purchase this service from Míla. In its calculations, Míla assumes that a company with fewer than [...] connections will not purchase this service directly from Míla because of the nature of the service.

There is considerable uncertainty about take-up of the service, which means that it is reasonable to take that into account when deciding the setup charge. The PTA makes no objection to half of the setup costs being collected in the setup charge.

4.5 The position of the PTA

The PTA has scrutinised the Míla cost analysis with respect to Síminn costs, Míla internal costs and criteria for number of electronic communications companies and for connections. The PTA has also examined the division of costs between setup charge and monthly charge.

The PTA endorses that the Míla tariff for VoIP service on Access Option 3 will be as follows

VoIP on Access Option 3

Setup charge to electronic communications companies	ISK 1,073,280
Monthly charge per connection	ISK 233

These are wholesale rates per minute ex VAT.

In the light of the fact that this is a new service, the PTA considers it normal that the tariff be reviewed when figures are available on the real number of electronic communications companies and connections and on real costs. Míla is obliged to separate costs for its VoIP service that will be used as a basis for revision of the above specified tariff. Míla is obliged to submit an audited cost analysis, no later than 18 months from the coming into force of the above specified tariff for VoIP service on Access Option 3.

² Pre-selection single billing, see Síminn reference offer for interconnection of fixed line telephony networks.

³ If a call goes through a Síminn exchange, a charge is made for transfer, a connection charge of ISK 0.34 and ISK 0.15/minute along with a collection surcharge (5%).

The Decision

The Post and Telecom Administration endorses amendments to Appendix 5 to Míla's reference offer for bitstream access, according to Appendix I to this Decision. The amendments will constitute Article 6.2 in the said Appendix 5 with the heading "IP telephone service provided at a fixed location (VoIP) on Access Option 3".

The Post and Telecom Administration endorses the Míla ehf. cost analysis dated 11 July 2017. The conclusion of the cost analysis is as follows:

VoIP on Access Option 3

Setup charge to electronic communications companies	ISK 1,073,280
Monthly charge per connection	ISK 233

Prices are ex VAT.

The new Míla ehf. tariff shall come into force on ??.

Míla shall update Appendix 1 to its bitstream reference offer no later than on the coming into force of the above specified price changes.

This Decision can be appealed to the Appellate Committee for Electronic Communications and Postal Affairs, see Article 13 of Act no. 69/2003 on the Post and Telecom Administration. The appeal shall have reached the Appellate Committee four weeks from the time that the party in question became aware of the Decision of the Post and Telecom Administration. Costs for an appeal are according to Paragraph 5 of Article 13 of the same Act, and in addition to this there is a special appeal charge to the amount of ISK 150,000, pursuant to Article 6 of Regulation no. 36/2009 on the Appellate Committee for Electronic Communications and Postal Affairs.

Reykjavík, XX XX 2017

Hrafnkell V. Gíslason

Óskar Þórðarson