



## PÓST- OG FJARSKIPTASTOFNUN

### **Draft Decision on vectoring of the Mila's VDSL connections**

#### **I**

##### *Introduction*

The case being dealt with in this instance relates to an application from Mila ehf (Mila) for PTA endorsement of amendments to the company's reference offer for bitstream access with respect to planned vectoring of the company's VDSL connections. The vectoring in question is dealt with in a separate appendix to the reference offer in question which would be Appendix 2a.

#### **II**

##### *Facts of the case*

#### **2.1. The PTA Decision no. 21/2014 on Markets 4 and 5**

With the PTA Decision no. 21/2014 dated last 13 August, Mila was designated as being an undertaking with significant market power on the market for wholesale (physical) network infrastructure access at a fixed location (Market 4) and on the market for wholesale broadband access (Market 5) and the appropriate obligations were imposed on the company on the markets in question, inter alia for access, non-discrimination and transparency<sup>1</sup>. The Market of primary importance in this instance is the latter Market<sup>2</sup>.

In the access obligation on Market 4 it is stated that access to sub loops, for example in street cabinets, is part of the obligation for access to the copper local loop. Operators of

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<sup>1</sup> In 2007 Mila was designated as an undertaking with significant market power on Market 11 (formerly Market 4) and Siminn was designated as an undertaking with significant market power on Market 12 (formerly Market 5). In March 2013 the Competition Authority made a Settlement with Skipti hf. (the parent company of Mila and Siminn). In accordance with the provisions of the Settlement, the Group's operations on Market 5 were moved from Siminn to Mila in September 2013. Since then, the Group's obligations on the markets in question have been borne entirely by Mila.

<sup>2</sup> Vectoring is a technical addition to the VDSL standard and is part of the bitstream access products in Market 5. The introduction and implementation of the vectoring technology or communication standard falls under the transparency obligation, hence the draft measure is an amendment to the published reference offer for bitstream.

bitstream systems that require shorter line lengths use such access to sub loops to develop their systems from street cabinets to end users. This applies to VDSL systems like those operated by Mila. It can be problematic to provide access to more than one VDSL operator to street cabinets, among other things because of lack of space in such cabinets and the cost of enlarging them or constructing additional cabinets. There are also technical problems such as crosstalk. Vectoring is a technology that reduces crosstalk interference and thus increases the performance of VDSL connections. In order to make concessions to these new requirements, obligations are often imposed for open virtual access to sub loops (VULA). VULA involves providing a connection from an aggregation point to the end user. It would thus be clear that were one to take into account the possibility of using vectoring to increase VDSL connection performance and achieve the objective of open access for such local loops, one would need to augment prior obligations in force on Mila (formerly Siminn). In this connection one has to particularly keep in mind that Mila is almost the only electronic communications company that provides service using the VDSL technology on copper local loops today.

Finally it was stated that because of the problems that could arise in providing access for more than one party to the sub loop that carried the VDSL system, the PTA would particularly take into account these factors when imposing an access obligation on Market 4. Mila should thus provide access to local loops from an aggregation point to the end user in such a manner that the party leasing virtual access has full access to the VDSL system in question with all those technical and performance specifications needed to provide any kind of service over bitstream. In those street cabinets where VDSL equipment was already in place and where Mila ensured and guaranteed that open virtual access had been implemented and where the use of vectoring was planned, the PTA provide an exception from the obligation on Mila for access to sub loop. Having fulfilled these conditions Mila could be granted an endorsement from the PTA for the cancellation of the obligation for access to sub local loops with respect to these local loops. The use of vectoring would thus be the main prerequisite for the provision of such service. Should Mila not have implemented vectoring within 3 months of the exemption having been granted then it will be rescinded by the PTA.

According to the access obligation on Market 5, Mila shall accommodate normal and fair requests for open access and for specific network facilities on local loops at wholesale level, including in VDSL. The network facilities in question include inter alia access to bitstream through the upper frequency range of copper local loops (Access Options 1-3). Mila should also, where requested, handle the sending of bitstream through its backbone network to a location where the electronic communications undertaking in question has a connection with the Mila network. Mila shall furthermore provide hosting of equipment of other electronic communications undertakings and access to other facilities needed to fully implement bitstream access, and shall also offer the capability for resale of bitstream service and access to the company's backbone and information systems. In addition to this Mila is required to notify all technical migration in advance so that customers can react in a timely manner.

According to the non-discrimination obligation on Market 5, all electronic communications undertakings that purchase access to bitstream shall enjoy the same conditions with Mila as apply to units within the Group or to other related parties. The same applies to quality of access. This applies to the equivalence of input obligation (EOI) which means that Mila shall offer the same prices to related and unrelated parties, shall use the same service processes and systems, shall deliver services within the same time limits and shall publish the same information on the service to all parties. The non-discrimination obligation in question shall be implemented no later than 3 months subsequent to the publishing of the decision, i.e. no later than 13 November 2014. Mila shall inform related and unrelated parties with the same notice about rolling-out, construction or other development of the company's bitstream system. This notice shall be no shorter than three months. VDSL system operators, such as Mila, can reserve up to 3 months priority rights on VDSL development in a specific area by publishing their three-month distribution plan and intended connection points for VDSL service where they must also notify the PTA about these plans.

The transparency obligation on Market 5 prescribes that Mila shall practise transparency in the sale of access to bitstream in wholesale and shall publish, in the form of a reference offer, information relating to access to the company's systems, for example technical descriptions and information on network characteristics. The reference offer on bitstream access shall be maintained with updates as required and shall be submitted to the PTA for endorsement no later than 6 months after the publication of the decision<sup>3</sup>.

## ***2.2 Informal notification by Mila to the PTA on the introduction of vectoring***

In a letter from Mila to the PTA dated 1 July 2014, the company notified that it would adopt vectoring on the company's VDSL system from and including 1 October 2014. This was not a new product but rather a new opportunity for new technology which would increase data transfer speed for end users. Price would not change but technical conditions could change which would need to be addressed in the reference offer. Initially the service would be offered in a limited area with the plan being that at the end of the year the service would have been activated in a number of districts within Reykjavik. Plans allowed for the service to have been activated throughout the capital city area [...]<sup>4</sup>. The letter in question was accompanied by a report which contains the related technical information.

## ***2.3 Email from PTA to Mila***

In an email from the PTA to Mila dated last 9 July, the Administration pointed out to Mila that the reference offer in force on bitstream access stated how these changes were

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<sup>3</sup> It should be noted that the first reference offer from the Group on bitstream access was published by Siminn on 1 July 2009. On 1 September 2013 the service in question was transferred to Mila and since then the reference offer has been published in Mila's name. The reference offer has been changed on a number of occasions through the years. The case here under discussion relates to a specific amendment to the reference offer. The PTA plans subsequently to conduct a comprehensive review of the reference offer in question in the first half of 2015.

<sup>4</sup> Removed due to confidentiality reasons.

to be implemented. There it was prescribed that a new reference offer should be published for the purpose of information and sent to the PTA at least three months prior to it coming into force. The PTA plans to initiate national consultation and consultation with the EFTA Surveillance Authority (ESA) with respect to the addition in question to the reference offer. It was requested that a formal notification of the addition in question in the form of a separate appendix to the reference offer be sent to the Administration before it would be possible to initiate the above specified consultation. The appendix should contain information on the alterations that would need to be made in order that Mila counterparties could take advantage of the new possibilities offered by this technology. PTA endorsement needed to be in place before Mila could begin to offer vectoring. The PTA however could see no reason why Mila should not continue testing the vectoring technology until the final endorsement had been received, on condition that Mila did not discriminate between its counterparties with respect to participation in the tests.

#### ***2.4 Informal notification by Mila to the PTA on the introduction of vectoring***

In a letter from Mila to the PTA dated 16 July 2014 it was stated that the company considered it most appropriate to add a separate appendix on vectoring technology to the existing technical section in the reference offer on bitstream access. The appendix in question, i.e. Appendix 2a was attached to the referenced email. It was stated that in the Appendix there was a description of the alterations necessary for Mila counterparties to be able to take advantage of the new possibilities offered by this new technology.

#### ***2.5 National consultation***

On last 23 July the PTA initiated national consultation on the above specified Appendix on vectoring technology in the Mila reference offer on bitstream access. The consultation continued until last 20 August.

In the Appendix in question it is stated that crosstalk from other DSL lines is the main cause of interference and of the fact that the speed of VDSL connections decreased with an increase in users of the technology. Vectoring is a technology which eliminates crosstalk between VDSL connections which pass through the same line binder. This has the effect that the signal will be similar to one where there is only one connection on a line binder. For this to be possible today, all VDSL signals on a line binder need to come from the same equipment in a telephone exchange or street cabinet. In addition to this the endpoint equipment must support the technology or at least must not cause interference in what are called "vectored groups". One can say that it is possible to divide VDSL endpoint devices into three categories.

1. Endpoint devices that are vectoring compliant and support all necessary standards to take advantage of vectoring.
2. Equipment that is vectoring friendly. Such equipment does not interfere with other connections and does not suffer interference from the control tones used by vectoring. The equipment is not improved in any way by vectoring.

3. Legacy equipment is equipment that does not recognise vectoring and which can cause interference to vectoring groups. If no other solution is found then this equipment would need to be replaced, or the connection changed so that it only used the 2.2 MHz frequency range to avoid interference with other connections.

To facilitate the adoption of vectoring, Mila plans to use what is called Zero Touch Vectoring Technology (ZTV). ZTV is a technology which works in a way that makes it possible to remove crosstalk from legacy endpoint equipment which is not vectoring compliant. The main disadvantage of ZTV is that vectoring compliant endpoint equipment only gains the benefit of vectoring downstream as vectoring must be removed in the upstream direction. It is appropriate to point out that legacy routers gain no benefit from vectoring.

For vectoring to work on connections, the user endpoint equipment needs to fulfil the following requirements:

- To support VDSL according to G .99 3.2 standard - the technology being used by Mila;
- To support G.vector (G.93.5) - for users to gain most benefit from their connections the endpoint equipment needs to support G.vector according to standard G.993.5. This is the technology adopted by Mila;
- To support error(f) back channel through layer 2 (G.993.5, Section 7.4.1);
- To support Seamless Rate Adaption (G .993.2 and G .998.4 Amd 1) - SRA adapts a steady line rate to the signal to noise ratio (SNR) without the line needing to be re-synched. In this way it is always possible to receive the highest possible speed on each line.
- To support G.inp (G .9 and 8.4), also Amd 1 and 2.
- Protection against connection on one wire and disorderly leaving from the user (TR-249, Section 8.9).
- Support Monitored Tones (G .99 3.2, Section 10.3.3.1).

Mila advises its customers to contact their endpoint device supplier with respect to these requirements in order to ascertain whether their existing equipment is vectoring compliant or whether it is possible to upgrade to this state. In most instances there is only a need for a software update of endpoint devices, but this depends on the type.

## ***2.6 Comments from Snerpa***

In comments from Snerpa dated 29 July 2014 it was stated that the company understood that vectoring was optional. If this were the case then the company had no objections at this point in time to the Mila presentation.

Snerpa did however wish to draw attention to the fact that in the price for Access Option 3 (A3) an allowance was made for costs for CPE (end user equipment). Snerpa understood that Mila would provide new CPE with connections, including vectoring compliant CPE where it was planned to activate vectoring. Up to this point in time Snerpa had provided user end equipment, both in A3 and on the company's own DSLAM equipment. Snerpa reserved the right to continue to use existing DSLAM equipment in those telephone exchanges where such equipment was currently being used, as it had been installed in accordance with the conditions currently in force.

## ***2.7 Comments from Vodafone***

In the Vodafone comments dated 20 August 2014 it was stated that the consultation document in question prescribed technical implementation of vectoring. According to the information in question, Vodafone systems should fulfil requirements made by Mila. Prior to the arrangements in question being adopted, Vodafone considered on the other hand that it was important that Mila should be obliged to commence preparation with electronic communications companies in order to ensure that use of the service would be possible for all parties without problems should their equipment fulfil the technical requirements.

### **III**

#### ***The conclusions of the Post and Telecom Administration***

The case being dealt with in this instance relates to an application from Mila ehf (Mila) for PTA endorsement of amendments to the company's reference offer for bitstream access with respect to planned vectoring of the company's VDSL services. The vectoring in question is dealt with in a separate appendix to the reference offer in question which would be Appendix 2a.

As was stated in the PTA Decision no. 21/2014 on Markets 4 and 5 here above, vectoring is a technology which reduces the crosstalk problem in VDSL systems which are distributed through street cabinets and which thus increases the operational capacity of VDSL connections. In order to support the distribution of VDSL in more sparsely populated areas, the PTA decided to prescribe that Mila<sup>5</sup> could acquire three-month

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<sup>5</sup> Electronic communications undertakings other than Mila could of course also acquire such priority rights. Such companies however bore neither VULA obligation nor an obligation for vectoring. On expiry of the three month notice that these companies had been granted to install VDSL equipment in street cabinets, other parties including Mila could install their own equipment in the same street cabinets. It should however be noted that where more than one party had installed VDSL equipment in a street cabinet then this would prevent vectoring in the area in question.

priority right to sub loops, usually in street cabinets, on condition that the company guaranteed open virtual access (VULA) to other electronic communications undertakings where it was planned to implement vectoring on connections in the street cabinets in question during the relevant three-month period. Otherwise the above specified priority rights for Mila would be rescinded. The implementation of vectoring was thus the main prerequisite for Mila receiving such an exemption from the access obligation to sub loops. In order to activate the priority in question, Mila is required to publish the relevant information and to send a notification to the PTA on this issue. The PTA would then publish this information on its website.

The non-discrimination obligation imposed on Mila on Market 5 required that Mila publicly notified its intentions for rolling-out, construction and other development of the company's bitstream system with no less than 3 months' notice in each instance. This is done to ensure that service providers are all on an equal footing when providing retail service in the relevant development area.

The transparency obligation prescribes that Mila update its reference offer on bitstream access when changes are made and that the PTA be notified to this effect. Changes do not come into force until the PTA has endorsed such changes with a decision subsequent to national consultation and consultation with the EFTA Surveillance Authority (ESA) and other electronic communications regulatory bodies in the EEA.

Comments on the above specified changes to the Mila reference offer on bitstream access were received from two parties - that is to say from Snerpa and from Vodafone.

There is some misunderstanding in the comments from Snerpa. Snerpa assumes that vectoring is optional. Vectoring is optional for those network operators that have facilities in a street cabinet if the configuration allows this. The basic prerequisite is that the company in question is one of the companies with facilities in the street cabinet in question. In the Snerpa operating territory in the West Fjords, the situation is that Snerpa and Mila both operate VDSL equipment at the same locations. While this situation pertains, vectoring is not an option. The decision presented here does not allow for a change in Snerpa status as a VDSL operator. Snerpa can therefore continue to operate its VDSL system in the company's territory. The Snerpa contention that Access Option 3 allows for costs for endpoint equipment is wrong. It is furthermore a misunderstanding by Snerpa that Mila will supply vectoring compliant endpoint equipment. It is for the service provider in question to ensure that his end-user customer has vectoring compliant equipment.

The customer premises equipment (CPE) are standardized „off-the-shelf“ VDSL modem/routers that access seekers should not have any trouble procuring. The preparation and distribution of such customer premise equipment is an operating procedure within each company and out of scope for the PTA to monitor, but has not been an issue in the past as CPE equipment is routinely upgraded and renewed. In light of the experience with CPE equipment upgrades, the PTA finds a 3 month notice for access seekers to meet the technical requirements set by Mila sufficient.

The comments from Vodafone are mostly positive. There it is stated that the Vodafone system should be able to fulfil the technical requirements made by Mila in the Appendix in question. Prior to the arrangements in question being adopted, Vodafone considered on the other hand it to be important that Mila be obliged to commence preparation with electronic communications companies in order to ensure that use of the service would be possible for all parties without problems, should their equipment fulfil the technical requirements.

The PTA considers the above Vodafone comments to be justified. Mila cannot commence the provision of service before a final decision by the PTA has been reached, subsequent to consultation procedures. Until that point in time it is normal that Mila continue to work on preparing the service with interested electronic communications companies. This harmonises with the obligations imposed on Mila with the PTA Decision no. 21/2014.

According to recent information from Mila, the company has been testing the vectoring technology with interested parties, including [...] <sup>6</sup>. Mila is also planning to summon an information meeting with electronic communications companies and the PTA which will in all likelihood take place on 31 October 2014.

The PTA doesn't foresee any form of penalty towards a electronic communication undertaking in case the operator doesn't implement vectoring within the prescribed three month period in the PTA Decision no. 21/2014 (M4 and M5), apart from revoking the exclusivity to develop vectoring. The said Decision doesn't allow for any further penalties. The PTA has limited direct power to step in when Mila or another electronic communication company takes advantage of its right according to the said Decision to gain exclusivity to implement vectoring. Besides, the Electronic Communication Act or the Act on PTA does not authorise the PTA to impose other kinds of penalties than daily fines. If the experience shows that Mila's plans (or the plans of other electronic communications companies) concerning the implementation of planned vectoring are unrealistic, the PTA will try to appeal to the company to notify more realistic plans.

The exemption to gain the above mentioned exclusive rights expires in 3 months and the PTA does not envision that these rights can be renewed with a new request for the same area from the operator.

With the above in mind the PTA plans to endorse the changes proposed by Mila with respect to vectoring.

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<sup>6</sup> Removed due to confidentiality reasons.



*Draft decision*

**Mila is authorised to introduce vectoring technology in the company's VDSL connections. The Post and Telecom Administration endorses Appendix 2a to the company's reference offer for bitstream access without amendments.**

**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 number 36/2009 on the Appellate Committee for Electronic Communications and Postal Affairs.**

*Reykjavík, xx November 2014*

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Hrafnkell V. Gíslason

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