NET NEUTRALITY AND QUALITY OF FIXED INTERNET ACCESS SERVICE

Introduction

This document provides information on the open Internet, in accordance with Regulation (EU) 2015/2120 of the European Parliament and the European Council. The mentioned regulation establishes measures in order to guarantee an open Internet for every user and to safeguard its accessibility by all means in a non-discriminatory manner. This document is an integral part of the contract between the Customer and POST Telecom and is applicable to all fixed offers of POST Telecom, regardless if they are still commercialised or not.

This document presents generalities regarding the quality of the fixed Internet access service, but also traffic management measures that POST may apply if needed as well as information related to settlement of disputes.

The quality of fixed Internet access service

The quality of fixed Internet access service depends on several parameters, among which the speed, latency, jitter and packet loss.

The speed represents the transmission speed of data traffic and varies with the available access technologies. Further details regarding speed are provided below

Latency is the time elapsed between the request for information and the receipt of this information. This means in simple terms that when the Customer wishes to open a web page, the latency corresponds to the time elapsed between the moment the Customer clicks on "Enter" and the moment when the Web page actually opens. Therefore, the shorter the time, the higher the quality of the fixed Internet access service.

Jitter is the variation in latency. Indeed, information requested by the user can be delayed, for example because of the load of the network. This is an important parameter of fluidity of the fixed Internet access service and the lower the jitter, the higher the quality of the fixed Internet access service.

In information technology, information is composed of several data packets in order to improve transmission over the network. However, e.g. as a result of network congestion, some packets may not be transmitted and must be resend. The loss of data packets then expresses the number of packets that need to be sent multiple times. Thus, a low data packet loss implies a faster reception of the requested information and a better quality of the fixed Internet access service.

Although each technical parameter described above is important, it should be noted that their level of importance is not always the same for all the possibilities of use of the Internet. Indeed, latency can be important for online gaming, but it has little impact on downloading a file. The table below provides, for illustrative purposes, the importance of these parameters for different applications:

Application	Download speed	Upload speed	Latency	Jitter	Packet loss
Voice over IP	-	-	+++	+++	+++
File Download	+++	-	+	-	++
Online gaming	+	+	+++	++	+++
Video / Music streaming	+++	-	+	-	++
Web Surfing	+	-	++	-	++

Table 1: Reading instructions: "-" represents low importance and "+++" stands for high importance.

As an example of reading, the download speed is important for video or music streaming, while it is less for online gaming. However, for online gaming, the downstream speed is less important while the latency and the loss of packets are very important, the latter two parameters influencing the fluidity of the game.

Latency, jitter and packet loss are not only dependent on the fixed network, but also other equipment (e.g. servers installed on social network premises) and equipment used by the Customer (router, Smartphone, WiFi connectivity etc.). Depending on the load to be managed by these equipment elements, the technical parameters may be impacted and the fixed Internet access service slowed down. Since the ISP cannot influence all the necessary equipment, POST cannot guarantee all the quality of service levels of the parameters described above.

Traffic management measures

POST is committed to constantly improving the customer experience, which is why POST works continuously to optimize the quality of its fixed network. Despite significant investments aimed at improving and / or optimizing the networks, POST may nevertheless be required to put in place reasonable traffic management measures. These meet the criteria of objectivity, transparency, non-discrimination, proportionality and necessity. These measures may consist of a throttling (i.e. a reduction of the speed of data transmission) or a blockage (i.e. an interruption of the fixed Internet access service).

It should also be noted that data transmitted over the Internet can be categorized to allow, for instance in the event of network congestion or in order to preserve the integrity of the network, certain categories of services to be prioritized over others (especially those where slight delays in transmission impact quality of service). Thus, in case of potential congestion, the IPTV service may be prioritized over the transmission of e-mails. If implemented, these traffic management measures have an identical impact on the functioning of the applications, regardless of the terminal used by the Customer (e.g. smartphone or desktop computer).

POST ensures that such differential treatments are only applied when absolutely necessary.

Protection of personal data

In accordance with Article 3(4) of Regulation (EU) 2015/2120, the implementation of the reasonable traffic management measures described above does not imply any treatment of the Customer's personal data other than that provided for in the general terms and conditions of sales[1].

POST's fixed network

Surf at speed of light thanks to optical fibre!

Optical fibre is the latest advance in fixed infrastructure for Internet access. With speeds of up to 1 Gbps[2], the customer can take advantage of POST's Ultra High Speed network. The deployment of optical fibre is in continuous progression and currently around 65 % of homes in Luxembourg are eligible for optical fibre, i.e. that they can subscribe to such an offer.

For areas where optical fiber is not yet available, fixed Internet access service is provided using the copper network at speeds up to 100 Mbps[3] using xDSL technologies, most notably ADSL ("Asymmetric Digital Subscriber Line") or VDSL ("Very-high-bit rate Digital Subscriber Line").

What the customer can do with fibre

Opt for the best of fixed Internet.

The following table provides loading time estimates for popular applications. These loading times are calculated advertised speeds[4]:

Access technologies		FTTH	FTTH	FTTH VDSL	FTTH VDSL ADSL	ADSL	ADSL
Advertised download speed		**1 Gbps**	**500 Mbps**	**100 Mbps**	**20 Mbps**	**12 Mbps**	**8 Mbps**
Advertised upload speed FTTH/VDSL		**500 Mbps**	**250 Mbps**	**50 Mbps**	**768 kbps[5]**	**/**	**/**
Advertised upload speed ADSL		**/**	**/**	**/**	**768 kbps**	**640 kbps**	**512 kbps**
Download of a music album[6] (± 50 MB[7])		< 1 sec.	<1 sec.	4 sec.	20 sec.	34 sec.	52 sec.
Download of a HD film[5] (± 1,5 GB[6])		12 sec.	25 sec.	2 min. 5 sec.	10 min. 29 sec.	17 min. 28 min.	26 min. 12 sec.
Upload of 10 HD photos (± 50 MB)	FTTH / VDSL	< 1 sec.	1 sec.	8 sec.	9 min. 6 sec.	/	/
	ADSL	/	/	/	9 min. 6 sec.	10 min. 55 sec.	13 min. 39 sec.
Web Browsing (page standard, ± 1 MB)		< 1 sec.	< 1 sec.	< 1 sec.	< 1 sec.	< 1 sec.	1 sec.
Loading of music streaming[8] (song of ± 3 min., ± 3 MB)		< 1 sec.	< 1 sec.	< 1 sec.	1 sec.	2 sec.	3 sec.
Loading of video streaming with standard quality[9] (video of ± 1 min., ± 4 MB)		< 1 sec.	< 1 sec.	< 1 sec.	1 sec.	2 sec.	4 sec.
Loading of video streaming with high quality [10] (video ± 1 min., ± 12 MB)		< 1 sec.	< 1 sec.	< 1 sec.	5 sec.	8 sec.	12 sec.

Table 2: Estimations of loading times for illustrative purposes only. Loading times cannot be guaranteed.

[1] Available on the website www.post.lu/terms
[2] Gbps = Gigabits per second. This is a measure of the speed of the Internet access service and indicates the amount of numerical data transmitted per second.
[3] Mbps = Megabits per second.
[4] Advertised speed are used in commercial communications.
[5] Kbps = Kilobits per second.
[6] Piracy hinders artistic creativity.
[7] MB = Megabyte. It is a unit of measurement of the digital data volume. 1 MB = 1024 KB (Kilobyte). 1GB (Gigabyte) = 1024 MB.
[8] Superior quality 320 kbps (kilobits par seconds).
[9] Standard quality 480 p.
[10] Superior quality de 1080 p.

The speeds of the fixed Internet access service

The speeds of the fixed Internet access service are dependent on several elements, including among others, the terminal used. Indeed, laptops or smartphones must be able to support those speeds.

Another important element is related to the copper infrastructure. Unlike optical fibre, which can carry a light signal over long distances without attenuation of the signal, the copper operates on the basis of electrical pulses to route the signal. On the copper network, this signal weakens with the distance between POST's interconnection points and the network endpoint in the Customer's building. In addition, the quality of the in-house cabling in the Customer's building can strongly influence the speeds actually observed by the Customer. As a result, advertised speeds cannot be guaranteed in all circumstances.

Network load during peak hours[11] is also an important point that can influence the speeds observed in the Customer's building. Beyond the point of interconnection of the POST network, the traffic of the entire neighbourhood of the Customer is collected and routed to servers giving access to the Internet. As the network is then shared after a certain point, the resources available in the network must be distributed in a non-discriminatory way among all users. Thus, the number of users and the uses they make of the network determine the load to be managed by the limited resources. As a result, the actual speed observed at the Customer's premises may differ from the advertised speeds.

Finally, it is also important to know that IP services also require some of the bandwidth, so that the fixed Internet access service may be slowed down and the speed deviate from the advertised speeds if the Customer uses multiple IP services simultaneously.

Regulation (EU) 2015/2120 defines the following speeds:

- the advertised speed is used in commercial communications,
- the maximum speed corresponds to the speed the Customer can expect to receive at least once a day,
- the normally available speed is the speed the Customer can expect most of the time when accessing the service, and
- the minimum speed corresponds to the minimum transmission speed that POST guarantees to the Customer.

It should be mentioned that the normally available speed is defined as a proportion of the maximum speed and cannot be less than the minimum flow.

Because of the various factors that may influence the transmission of the signal, POST wishes to explain that the maximum speed and the speed normally available at the Customer's address may differ from the advertised speed. POST invites Customer to use the online test tool available on the POST Web site[12] in order to take note of the maximum speed and normally available speed for an existing POST line. These measures take into consideration the infrastructure actually used (copper pair or optical fibre).

[11] From 20:00 to 22:00.

[12] https://support.post.lu/speedtest

The table below provides the values for the different speed defined by Regulation (EU) 2015/2120 for each POST fixed Internet access service offer:

Offer		Infrastructure	Included volume	Advertised speed		Maximum speed		Normally available speed		Minimum speed	
				Downstream	Upstream	Downstream	Upstream	Downstream	Upstream	Downstream	Upstream
Bamboo 1[13] ou 2 Business Duo ou Trio	**XL**	FTTH	Unlimited	1 Gbps	500 Mbps	1 Gbps	500 Mbps	During peak hours 70% of maximum speed During off-peak hours 90% of maximum speed			
	L	FTTH	Unlimited	500 Mbps	250 Mbps	500 Mbps	250 Mbps				
	M	FTTH	Unlimited	100 Mbps	50 Mbps	100 Mbps	50 Mbps				
Bamboo 1	**S**	FTTH	Unlimited	20 Mbps	768 Kbps	20 Mbps	768 Kbps				
Bamboo 2 Business Duo ou Trio	**S**	xDSL	Unlimited	20 Mbps	10 Mbps	20 Mbps	10 Mbps				
Bamboo 1 ou 2 Business Duo ou Trio	**M**	xDSL	Unlimited	100 Mbps	50 Mbps	Consult the online test tool on POST's website for an existing POST line[12]		During peak hours 30% of maximum speed During off-peak hours 70% of maximum speed		5 Mbps	1 Mbps
Bamboo 1	**S**	xDSL	Unlimited	20 Mbps	768 Kbps					1 Mbps	128 Kbps
Bamboo 2 Business Duo ou Trio	**S / S+**	xDSL	Unlimited	20 Mbps	10 Mbps					1 Mbps	128 Kbps
LuxFibre	**XL**	FTTH	200 GB [14]	1 Gbps	500 Mbps	1 Gbps	500 Mbps	During peak hours 70% of maximum speed During off-peak hours 90% of maximum speed			
	L	FTTH	100 GB [15]	200 Mbps	100 Mbps	200 Mbps	100 Mbps				
	M	FTTH	50 GB [15]	100 Mbps	50 Mbps	100 Mbps	50 Mbps				
	S	FTTH	30 GB [15]	30 Mbps	10 Kbps	30 Mbps	10 Kbps				
	M	FTTH	50 GB [15]	100 Mbps	50 Mbps	Consult the online test tool on POST's website for an existing POST line[12]		During peak hours 30% of maximum speed During off-peak hours 70% of maximum speed		5 Mbps	1 Mbps
	S	xDSL	30 GB [15]	30 Mbps	10 Mbps					5 Mbps	1 Mbps
	XS	xDSL	20 GB [15]	20 Mbps	768 Kbps					1 Mbps	128 Kbps
LuxDSL [13]	**Junior**	xDSL	2 GB [15]	8 Mbps	512 Kbps					1 Mbps	128 Kbps
	Run	xDSL	15 GB [15]	12 Mbps	640 kbps					3 Mbps	128 Kbps
	For Professionals	xDSL	Unlimited	20 Mbps	768 Kbps					5 Mbps	128 Kbps
	Silver	xDSL	Unlimited	20 Mbps	1 Mbps					512 Kbps	512 Kbps
	Gold	xDSL	Unlimited	20 Mbps	2,5 Mbps					1 Mbps	1 Mbps

Tableau 1: The different speeds of POST Telecom's fixed Internet access service offers.

Other limitations of use of the Fixed Internet Access Service

Some fixed Internet access service offers may have limited included volumes. In case of exceeding these, the consumption will be invoiced in accordance with the rate plan corresponding to the offer subscribed[15].

The fixed Internet access service and VoIP

Voice over IP is a technology that improves the quality of telephony. VoIP, as a specialized service, requires bandwidth, i.e. a resource needed for the fixed Internet access service. VoIP requires a portion of the IP bandwidth of about 100/100 kbps (downstream / upstream) for proper functioning, although the bandwidth actually used may vary.

The fixed Internet access service and VoIP

IPTV is the technical term for TV over Internet. IPTV, as a specialized service, requires bandwidth, i.e. a resource required for the fixed Internet access service. Whenever possible, POST provides the additional bandwidth required for the proper functioning of the IPTV service, which is approximately 3.5 Mbps per standard definition channel and approximately 7 Mbps per channel in high definition.

However, depending on the bandwidth capacity available to the Customer's address, it cannot be excluded that the quality of the fixed Internet access Service may be impacted by the simultaneous use of IPTV and Internet Service.

Settlement of disputes

[13] This offer is no longer sold.
[14] Unlimited with Integral
[15] Available on the website www.post.lu/terms

In the event that the Customer notices significant recurring or continuous discrepancies between the performance of the POST network and the indications provided above, the Customer may contact POST via the traditional means, namely the contact form available on www.post.lu/particuliers/contactez-nous, the call centre accessible 24/7 at 8002 8004, by post or by any other means made available by POST to receive the remarks.

POST wishes to assure the Customer that it is anxious to find the cause of any incident impacting the Customer's fixed Internet access service. If, however, no solution can be found by the means described above, the Customer may:

i) use the mediation procedure with the ILR through the downloadable form on its website https://web.ilr.lu/Mediation/FR/Mediation/Pages/HomePage.aspx when the dispute concerns services electronic communications;

ii) in the event that the contract has been concluded online or by any other electronic means, the Customer may use the platform made available by the European Commission at the following address: https://webgate.ec.europa.eu/odr/

iii) in all cases other than those referred to in points (i) and (ii) above and at the initiative of either the Client or POST Telecom, the dispute may be submitted to the Consumer Ombudsman or, alternatively, to the Centre de Médiation Commerciale (http://www.cmcc.lu)

Finally, if none of the aforementioned mediation procedures is initiated or leads to a settlement between the Parties in relation to a Customer claim, the courts of the Grand Duchy of Luxembourg have sole jurisdiction, except where another exclusive jurisdiction is determined under private international law.