Monitoring the quality of internet access services on fixed networks
Public consultation from 23 December 2011 to 17 February 2012

11th January 2012

- Objectives

The public consultation presents the directions that ARCEP plans to take for implementing a **system for monitoring the quality of internet access services** on fixed networks.

Upon completion of the work to be carried out in 2012, the ultimate aim will be to measure the quality of the services that Internet service providers (ISPs) deliver to their customers.

- **Consumers** will therefore be able to obtain clear and comparable information on the accurately measured quality of the services supplied by the different fixed ISPs, as a result of which they will be able to make more informed choices. This will in turn strengthen competition and emulation between operators in a way that will benefit the quality of the products they sell.

- At the same time, as part of the work it is performing on internet and network neutrality, **the regulator** will be able to keep track of the overall level of quality of service, and ensure that it remains satisfactory.

This means that the information presented will need to be **objective, representative, accurate, clear for users** and **allow for direct comparisons between operators.**

- Procedure

At the outcome of this consultation, the Authority will issue a **symmetrical decision on the publication of quality of service indicators**. This decision will include :

- a list of the indicators to be measured;

- the modalities for performing the measurements and publishing the indicators which will be defined by a common set of references.

The draft decision will be subject to a consultation with the sector's stakeholders (operators, service providers, consumers, users, equipment manufacturers, experts…).

The procedure begun with this public consultation is therefore similar to the one in 2008 devoted to setting up a system of quality of service measurements for fixed networks. As a result of this procedure, operators with more than 100,000 telephone subscribers have been required to publish a set of indicators on their websites on a quarterly basis since 30 June 2010. This indicators are also defined in a more general fashion in an ARCEP decision, while a common set of references is detailed in a separate document.

Drawing on the experience acquired through this process of measuring fixed network QoS, the Authority is nonetheless keen to provide a more solid framework for the system to be used to perform these measurements and for the publication of QoS indicators on internet access services. This is why the modalities will be specified in the decision itself, through a common set of references.

In application of the decision that ARCEP will adopt in 2012, **the quality of service measurements that operators will be required to provide must be performed by an outside service provider.** The thus assembled indicators will then result in:

- a quarterly publication on each operator's website;
- a synthetic and comparative publication from ARCEP.

In addition, as part of an **open data policy, it is planned for all of the raw data produced by the measurements to be made available to the public.** The goal is to increase the degree of transparency provided by the system, and to open the way for innovative uses of the data.

- Legal framework

Implementation of a QoS monitoring system

The implementation of a system for monitoring the quality of internet access services is supported by Article D.98-4 of the French Postal and electronic communications code which stipulates that, "*the operator [will] measure the value of the quality of service indicators defined by the Electronic communications and postal regulatory authority (ARCEP)"*.

In accordance with existing laws, **operators naturally have a central role to play and will be responsible for performing QoS measurements** that will need to comply with the decision that ARCEP adopts in 2012.

ARCEP is therefore not legally able to:

- demand that operators finance the measurements they perform themselves (or, in this instance, performed by an outside provider);
- impose on the operators subject to its decision the choice of outside service provider who will actually perform the measurements.

ARCEP is, however, empowered to give a precise definition of the modalities to be employed for measuring the indicators and for publishing the results.

To obtain harmonised and comparable indicators, it is advisable that the operators all employ the same outside service provider. This condition may even prove necessary if the results of these measurements are to be used, for instance, to define a minimum set of quality demands for internet access services (see below). Should difficulties arise, it may be necessary to have a legal provision that allows ARCEP to demand that a single outside provider be used.

Minimum quality of service demands

With the transposition of the legal provisions of the Telecoms Package, ARCEP is now **empowered to set minimum quality of service thresholds** to prevent QoS from deteriorating and network traffic from being slowed down or obstructed. **The introduction of a system for monitoring the quality of internet access services is intended to inform the Authority in the use of this newly assigned responsibility.**

This system of monitoring will therefore enable the regulator to ensure that the quality of internet access services remains sufficiently high, and especially that the development of managed services does not occur at the expense of internet access. **ARCEP's approach is essentially a preventive one** – the goal, in theory, not being to define minimum quality of service thresholds.

- Objectivity and accuracy of the results

Regardless of which undertaking is tasked with measuring the quality of internet access services, **guaranteeing their objectivity and accuracy is a major and complicated concern.** The results are indeed vulnerable to bias, due either to the way the measurement methodology is defined or how it is put into application. Operators must also agree not to favour the measured points in their systems or requests used to obtain the measurements, to ensure that the process result in an accurate measurement of the actual quality of service provided to their customers.

The technical objectivity of the measurements must be guaranteed through:

- the use of an **outside service provider who is independent from the operators**;
- the use of **test servers** located outside the operators' network and not controlled by them;
- compliance with the detailed technical characteristics of the measurements, as set in the **ARCEP decision.**

In addition, relying in particular on the transposition of the regulatory provisions contained in the Telecoms Package, ARCEP may impose a system of **certification for the measurement methods**. This certification could be issued by an auditor who is independent from both the operator and its service provider. In any event, given the proposed indicators (bitrate, packet loss, web page load time, etc.), certifying the measurement methods appears a much less complicated affair that its is with QoS indicators – such as those being assembled today for measuring the quality of fixed services – whose findings are based on information drawn from operators' information systems (fault repair time, etc.).

Different provisions are also being planned to ensure that the **measurements are performed accurately:**

- it is planned to have **the raw data pertaining to all of the measurements made available to the public, as part of an open data policy**;
- an **individualised information tool** could be made available to all users, which would allow them to compare the performance of their own connection with the average performances posted by their operator;
- **control measurements** could be performed randomly by a third party, on locations that will not be made known to operators.

Moreover, to ensure that the measurements are objective, ARCEP will continue to work in tandem with stakeholders other than operators (i.e. consumers, service providers, etc.) on defining a common set of references.

Finally, giving operators the task of performing these measurements allows the Authority to launch a penalty procedure against an operator should their indicators prove not to be objective or accurate.

- <u>Scope and methodology</u>

To obtain and present comparable and consistent quality of service indicators, **six categories of access** are being proposed:
- high performance xDSL connection;
- average xDSL connection;
- lower quality xDSL connection;
- high performance cable connection;
- lower quality cable connection;
- fibre-to-the-home (FTTH) connection.

It is also being suggested that, for all access categories, a distinction be made between connections supplied in Metropolitan France and those supplied in the overseas markets.

ARCEP's plan is for the obligation to measure and publish quality of service indicators for a given type of access be imposed only **operators with at least 100,000 subscribers in that category.**

<u>Measurement methods</u>

To ensure that the indicators produced by the operators are entirely comparable, they need to be obtained:
- in an environment that is not likely to be influenced by the user's equipment (operating system, browser) or the connection mode they use in the home (Wi-Fi, Ethernet, PLC, etc.);
- from connections whose main parameters (technology, commercial offer, length of the ADSL) are known and fully controlled.
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Based on these criteria, and in light of the methods identified by ARCEP in 2011, there appear to be two appropriate measurement methods:
- **dedicated environment** – The measurements are performed on a limited sample of lines which are deployed specifically for this purpose. This method is used to obtain some of the indicators produced for the QoS surveys of fixed networks;
- **network probes** – measurements are taken from the lines of a panel of customers, using a router hooked up to their modem. This is the method that is used by the FCC, OFCOM and the European Commission in their work on quality of service.

Once the public consultation and additional work in 2012 have been completed, **ARCEP will choose between these two methods.**

- <u>Types of measurement</u>

Three types of complementary indicator are being planned:
- **bitrate** (upload and download);
- **technical performance** (latency, jitter, packet loss);
- **indicators relating to usage** (web browsing, streaming…).

Bitrate is a complicated indicator which makes it possible to characterise the network's performance (and especially an access network's) and one which consumers are starting to be familiar with.

Technical performance indicators make it possible to characterise the network's intrinsic performance. Work will need to be done one processing and representing these data to make the indicators usable by consumers.

To provide users with information that more closely reflects their actual experience, measurements can be based on a selection of **popular forms of use** (browsing, streaming, P2P file sharing). These measurements would require not only the use of test servers, but also websites or even streaming sites that consumers actually visit.

Additionally, it may eventually be appropriate to obtain indicators that make it possible to **monitor the traffic management practices** being employed by operators. ARCEP nevertheless wants to focus initially of obtaining a general view of the quality of internet access services on wireline networks. But the process could evolve to include traffic differentiation measures, particularly on mobile networks where the issue is particularly critical.

- <u>Terms for performing the measurements</u>

To ensure that the results are comparable, the measurements should be taken when the line corresponding to the measurement points is not in use. Additionally, measurements could be taken when managed services (such as IPTV) are being used.

- Additional individualised information

The published indicators are essentially aggregated by operators (e.g. average bitrate measured for operator A, on high-performance xDSL during heavy traffic times).

As an adjunct, there are also plans to have operators make an instrument available to end users that would allow them to perform the same measurements on their own connection. This would provide them with individualised information that can be compared to the aggregate data.