Note: This is a translation into English. For all legal purposes, only the French version is valid.

Electronic Communications and Postal Regulatory Authority

Recommendation

specifying the terms governing access to ultra-fast broadband optical fibre electronic communications lines

DISCLAIMER

Pursuant to the European Commission observations on the draft recommendation, which were issued on 5 November 2009, ARCEP may be required to make changes or bring greater detail to the present draft recommendation should persistent disagreement occur between the stakeholders over the concrete implementation of the planned principles or pricing obligations, to provide the players with the regulatory and legal security they need to invest.

Introduction

The increasing development of the uses being made of the Internet and the ongoing enhancement of audiovisual content are spurring the deployment of new, ultra-fast broadband optical fibre-to-the-home (FTTH) networks, which will take place over the next ten years. Already well underway in Japan and South Korea, new generation access networks are starting to be rolled out across Europe. In France, the leading ADSL and cable providers have demonstrated their willingness to invest in fibre, which is an asset. Our country also has a head start in the definition of its regulatory framework, thanks to the adoption of the Law on modernising the economy (LME) and of the regulation implemented by ARCEP in summer 2008.

The first rollouts have begun in Paris and in the city centres of the country's largest metropolitan areas. Difficulties have nevertheless arisen when installing fibre inside buildings. The law provides for having this portion of the network be "shared," – i.e. shared between operators to limit the amount of installation work that needs to be done on private property, while allowing consumers to benefit from a competitive market by having the freedom to choose their service provider. Operators nevertheless have different views on how to put this principle into application.

As part of the optical fibre rollout steering committee, which was formed by the government in late 2008 and which operates under the aegis of the Electronic Communications and Postal Regulatory Authority (ARCEP), the country's major operators began testing and assessing different methods for providing access to optical fibre infrastructure. The goal was to obtain a sufficient amount of experience and feedback to gradually define the rules that will govern operators, to enable efficient access to optical fibre from both a technical and economic standpoint.

The initial findings of these trials were made public on 7 April 2009. Based on these findings and on other work performed on the terms governing access to optical fibre, that same month

ARCEP submitted its guidelines on the terms and conditions of sharing optical fibre infrastructure to public consultation.

The Authority published a summary of the responses to this consultation on 22 June 2009, and submitted the following documents for public consultation, from 22 June to 22 July 2009:

- a draft decision specifying the terms and methods for accessing ultra-fast broadband optical fibre electronic communications lines;
- a draft decision specifying the instances in which the concentration point could be located on private property;
- a draft recommendation on the terms and methods for accessing ultra-fast broadband optical fibre electronic communications lines, accompanying the draft decision.

On 28 July 2009, ARCEP requested the Competition Authority's opinion on a draft decision that was produced by combining the two initial draft decisions, and amended after taking account of stakeholders' contributions to the public consultation.

The Competition Authority's opinion was also sought on a draft recommendation, also amended, on the terms and means of accessing ultra-fast broadband optical fibre electronic communications lines.

After having taken the opinion of the Competition Authority into account, ARCEP notified its draft decisions and recommendation to the European Commission on 5 October 2009, while also submitting them to a new public consultation which ran from 5 October to 5 November 2009.

After having taken account of the remarks that the European Commission issued on 5 November 2009, along with the responses to the public consultation, ARCEP made changes to its draft decisions and recommendation with a view to submitting them to the Electronic communications advisory committee (*Commission consultative des communications électroniques*) on 4 December 2009.

The decision was ultimately adopted by ARCEP on 22 December 2009 and submitted to the Minister responsible for electronic communications for approval.

The questions being addressed in the present document have already been thoroughly explored with stakeholders.

The concrete implementation of the principles and rules stipulated in the draft decision indeed required certain specifications, which are provided in the present document.

This document is not meant to be prescriptive in nature, but rather to serve as a guide for operators when establishing their access offer for competing providers – which is to be published within a month of the publication of the ARCEP decision in the Official Gazette of the French Republic – and to facilitate the negotiation of access agreements between operators.

I. Recommendation on the terms governing the installation of optical fibre lines in a building located in a very high density area

In Article 5 of its decision, the Authority proposes to impose the stipulation that, in very high density areas, for all access requests submitted prior to the installation of lines in a building, the building operator must grant all reasonable requests from operators concerning the component elements of the lines or their technical environment, and particularly requests for:

- having a dedicated optical fibre installed for each housing unit or office space in the building, making it possible to provide services to the end user from the concentration point;
- being able to install an optical cross-connection box at or close to the concentration point.

This same Article 5 specifies that the building operator can request that the operator on whose behalf this equipment is installed contribute at the outset to financing the installation of lines in the building, under the terms stipulated in Article 3 of the decision.

The concrete implementation of this system requires coordination between the operators before the installation and connection of the optical fibre in the buildings in question, which could be carried out according to the modalities described hereafter.

1. Prior consultation

It is recommended that a transparent process be put into place on a municipality-wide scale, which would make it possible to identify all those operators wanting to participate in co-financing the installation of lines in the building, then to define from the outset the terms governing the deployment of the fibre and each operator's access to it (shared or dedicated fibre).

To satisfy the demands of the ARCEP decision with respect to the modalities for deploying fibre in buildings located in very high density areas, the building operator must give competing vendors the opportunity to express their interest in having an additional dedicated fibre or an optical cross-connection box installed on their behalf.

In practice, it is recommended that any operator likely to be equipping buildings with fibre in very high density areas consult with other operators on a regular basis, according to the terms described below.

Geographical scale

It is recommended that this consultation process be performed on a municipality-wide scale. Consulting with competing operators for each building would create a complicated situation and could lead to market skimming, while consultation on too broad a scale would not allow operators to target their requests in accordance with their rollout objectives and priorities.

The consultation process

It is recommended that the consultation be a two-step process, with the first stage devoted to identifying those operators who are interested in investing from the outset in a fibre deployment, and the second stage to defining the terms for deploying fibre in the buildings in question with these operators.

During the first stage, players could express their interest in helping to pre-finance the installation of optical fibre in the buildings that will be equipped by the operator who launched the consultation, in all or a portion of the very high density municipalities. They would specify the technical means via which they want to connect to the corresponding buildings (dedicated fibre, fibre that could be shared with another operator, plans to install an optical cross-connection box, etc.). Players would be given a sufficiently long period – one month, for example – to respond during this first stage.

When a third-party operator expresses its interest in rollouts in a given municipality, it implies a commitment to helping pre-finance the equipment of buildings, and this in all of the buildings in the very high density area for which the building operator who launched the consultation has signed an agreement with property owners, during the period for which the third-party operator has made such a financial commitment (see below). It seems advisable for the operator launching the consultation to be able to request financial guarantees from the operators who have expressed their interest in financing the installed infrastructure.

The second stage of the process will provide the building operator with an opportunity to hold additional talks with only those operators who expressed their interest during the first stage, to define the rollout terms that will apply to all of the buildings in the municipality, and particularly the number of fibres to be installed and the conditions attached to the possible installation of an optical cross-connection box. This second stage could result in a firm commitment from interested third-party operators, which could take the form of an agreement signed with the building operator.

Length of commitment for interested operators

The length of each operator's commitment to the operator who has launched the consultation, to helping pre-finance installations in the buildings located in the municipalities in questions, should be long enough to cover the work schedule and interactions between the players induced by requests to outfit the buildings with optical fibre (several months between the initial proposal and completion of the work), and to limit any risks of opportunistic behaviour or only partial coverage of the area in question. A duration of at least three years therefore seems advisable.

Players consulted

Every operator who is likely to equip buildings with optical fibre should consult, at the very least, with those operators listed by ARCEP in application of Article R.9-2 of the french postal and electronic communications code (hereinafter "CPCE"), in the areas that concern them. For the sake of transparency, building operators are nevertheless invited to extend their consultation to as many players as possible, at least during the first stage of the process described here above.

Regularity of the consultations

Consultations will be held on a regular enough basis to allow other potentially interested operators to respond. An annual basis seems appropriate.

2. Equipment installed in the building

The terms and conditions governing the deployment of optical fibre inside buildings, which were proposed by ARCEP in its decision, are part of a broader effort to enable infrastructure-based competition in very high density parts of the country, taking a technology-neutral approach with respect to the design of the PON or point-to-point network. In terms of implementation, however, it does not seem reasonable that the building operator be required to install more than four fibres per customer unit, regardless of the requests from third-party operators to install equipment in the buildings on their behalf.

This section describes the principles that could govern the relationship between the players, with respect to the equipment installed in the buildings.

If no operator expresses an interest in being involved in the fibre rollout during the prior consultation (scenario 1), the building operator can install only a single fibre per customer unit. In this case, and in accordance with CPCE Article L. 34-8-3, it must then provide access to this fibre at the concentration point (cf. point ***3.*** of Section **I.**).

When *x* number of operators request a dedicated fibre – including the building operator itself if applicable, and excluding a possible situation of several operators sharing a single fibre – is less than or equal to four (scenario 2), the building operator will install at least *x* number of fibres. At the very least, it will then make the re-clad cable containing the fibres available to each of the other operators on whose behalf it was installed, at the concentration point.

Under this second scenario, during the first stage of the consultation, third-party operators can ask to be able to install an optical cross-connection box for their dedicated fibre, at or near the concentration point.

In addition, to ensure satisfactory after-sales service on the portion of the network for which it is responsible with respect to the owner of the building, while allowing for exceptions, it is recommended that the building operator supply the other operators with a preconnectorized optical fibre cable.

The technical configurations requested by each operator must be indicated at the outset, during the prior consultation provided for in point ***1.*** of Section I. It seems advisable that these configurations be homogenous in each of the areas where operators express their interest at the outset.

Under scenario 2, even if only one or two additional fibres need to be installed per customer unit to satisfy the requests made by third-party operators who expressed their interest at the outset, the building operator can still install four fibres per unit. Indeed, the fact of setting a predetermined number of fibres could allow the operator to benefit from having standardised equipment and standardised installation and maintenance processes, and so to reduce costs thanks to economies of scale and volume, particularly since standardised equipment (notably optical network units) with four connectors already exists. The building operator is not, however, obligated to make a four-fibre installation its standard solution and can also guarantee access to a shared fibre for third-party operators who did not express their interest at the outset (cf. point ***3.*** of Section I).

When four or more operators have expressed their interest in gaining access to the infrastructure during the first stage of the consultation, and excluding a possible situation of sharing a fibre, it seems disproportionate from an operational standpoint to recommend that more than four fibres be installed. In particular, the two-step prior consultation process, provided for in point ***1.*** of Section I, is designed to allow the building operator under these circumstances to define a scheme for deploying a maximum four fibres per housing unit with the interested operators, by allowing several operators to share the same fibre if they so desire.

3. Providing access to operators who did not express interest at the outset

Operators who did not express their interest in accessing infrastructure at the outset must be allowed to enter the market at a later time, without it causing undue restrictions for the building operator. In accordance with the ARCEP decision, when at least four optical fibres have been installed per housing or office unit, and when all of the installed optical fibres are being used by other operators, new entrants can only be offered access from an access point that is located higher up the network than the concentration point, in either active or passive form. Otherwise, access will be provided in passive form from the concentration point.

As described earlier, under scenario 1 the building operator will provide other operators with passive access at the network access point where it connects its fibre. In this situation where there is a lack of interest from other operators in having a dedicated fibre, this point could be located higher up the network, e.g. at a street cabinet or optical distribution frame (ODF). Whatever the case may be, the technical and pricing terms governing access to fibre must be reasonable and non-discriminatory, in accordance with Articles 2 and 3 of the ARCEP decision.

Under scenario 2, in accordance with Articles 2 of the ARCEP decision, the building operator must plan for the future possibility of allowing operators who did not express interest at the outset to connect to the concentration point under the same conditions as those offered to operators who did express their interest at the outset. This can be achieved in two, not necessarily mutually exclusive, ways:

- the building operator has installed more fibres per customer unit than were requested at the outset, and makes a dedicated fibre available to the new operator at the concentration point (scenario 2a). When four fibres have been installed and all are already being used by other operators, the building operator can only provide access higher up the network, in either passive or active form, e.g. through a bitstream solution. This allows new operators to enter the market without requiring the building operator to share a fibre at the concentration point, in addition to the four fibres it already installed;
- the building operator provides access to a shared fibre (scenario 2b) at the concentration point to which the other operators are connected. In practice, shared access can be implemented by either the building operator itself or by a third-party operator who has agreed to be contracted by the building operator to do so.

It is recommended that the system implemented by a given building operator be the same throughout each of the municipalities where it is equipping buildings. It seems advisable that this system, along with the terms of access – including, when applicable, the name of the third-party operator contracted to supply access – be established during the consultation provided for in point ***1.*** of Section I, and made known to the other operators.

4. Cost sharing

The purpose of this section is to describe the principles of fair cost sharing between the operators who are co-investing in and pre-financing the installation of optical fibre in buildings in a given area, whether building operators or access-sharing operators.

The ARCEP decision identifies several principles that should be taken into account when assessing and sharing the costs, in view of setting the price of access offers:

- the principle of non-discrimination: discriminating against operators who are in similar situations would weaken retail market competition by artificially favouring a given situation or strategic choice;
- the principle of objectivity: the tariffs set by an operator must be justified, based on clear and verifiable costs elements;
- the principle of relevance: costs must be shouldered by the operators who incur them or who make use of the corresponding infrastructure or services. This means that the building operator must not be required to shoulder the costs incurred by the installation of additional fibre on behalf of other operators. In addition, this principle extends to a correlation between sharing costs and sharing any possible revenue generated from hosting operators that may connect to the building in the future;
- the principle of efficient investment: the costs that are taken into account must correspond to those incurred by an efficient operator. This means that the building operator cannot require third-party operators to support undue or excessive costs.

Application of these principles

The following modalities are suggested for implementing cost-sharing principles to apply to fibre installations inside buildings.

The principle of non-discrimination means that two operators in a similar situation will benefit from the same cost-sharing conditions. The ARCEP decision stipulates that the operator can demand that operators who express their interest in accessing infrastructure from the outset be required to help finance the installation of optical fibre lines in the building. By the same token, the principle of non-discrimination means that a access-sharing operator can, if it so desires, share the costs incurred by its request and co-invest from the outset, rather than entering into a scheme of leasing the infrastructure deployed in the building.

The principle of objectivity implies that an operator must be able to justify the tariffs it charges, notably based on clear and comparable cost elements. The building operator must therefore be able to prove the objectivity of its cost assessments, particularly when these costs are shared or assumed by other parties.

The principle of relevance requires a correlation between the costs shouldered by the operators and the infrastructure and services to which they have access. This means that the building operator will not shoulder the costs incurred by the installation of additional fibre on behalf of other operators or of an optical cross-connection box that it will not use itself. On the flipside, infrastructure costs that result from the rollout choices and methods that are proper to an operator (or a sub-group of operators), and which are not useful to all of the operators connected to the building, will not be shared by everyone.

The principle of relevance also extends to a necessary correlation between sharing costs and sharing any possible future revenue generated by hosting operators who did not express their interest at the outset.

As concerns the principles of relevance and non-discrimination, when costs are shared they should be prorated according to the number of operators connected to the building rather than the number of fibres installed. The first sharing scheme indeed seems more consistent with the cost structure associated with installing fibre in a building, as it includes a substantial portion of fixed costs and therefore is not proportionate to the number of fibres installed.

The principle of efficient investment implies that the costs that are taken into account correspond to those incurred by an efficient operator. This means that the building operator cannot require third-party operators to support undue or excessive costs

Examples of the possible application of these principles

The purpose of the two examples that follow is to illustrate possible methods for implementing these principles, in a situation where two operators have a dedicated fibre and a third operator has access to shareable fibre.

First case scenario: the building operator uses a shareable fibre

In this case, the rollout configuration taken as the point of reference is a single-fibre deployment.

The three operators pay an equal share of the cost of installing the fibre in the building that corresponds to this single-fibre deployment, excluding the cost of the optical distribution box.

The two operators who have a dedicated fibre will pay an equal share of the cost of installing two additional fibres.

The building operator elects either to shoulder the cost of the optical cross-connection box that will make it possible to host other operators in future – in which case it will earn future revenue generated by hosting other operators within the perimeter of this infrastructure – or to have all of the operators pay a share of this cost.

In the second case, the cost of the cross-connection box will be shared equally among the three operators which will then earn an equal share of the revenue generated by future operators connecting to the device, via resale rights, minus the premium given to the building operator through an *ad hoc* rate of return on investment.

Second case scenario: the building operator uses a dedicated fibre

The logic is the same as in the previous case scenario, except that the third-party operator who has an optical cross-connection box installed on its behalf, and paid for it entirely, will be the sole beneficiary of any future revenue generated by hosting other operators within the corresponding perimeter.

In this case, then, any hosting of future operators by the building operator will, in principle, be ensured by installing an "idle" fourth fibre, the cost of which may or may not be shared by the other operators, depending on what the building operator decides – which will then affect the way in which any future revenue from that fibre is shared.

Future new entrant operators can also be hosted by the access-sharing operator who has installed an optical cross-connection box on its dedicated fibre.

Practical implementation

In accordance with Article 4 of the ARCEP decision, all building operators will publish an offer for accessing their lines which make it possible to satisfy requests from third-party operators, regardless of whether these requests are made at the outset or at a later date, under pricing conditions that are defined in the decision.

Based on this access offer, and in light of the present recommendation, the building operator will then establish access agreements with the interested third-party operators.

Generally speaking, it is preferable for the building operator to have a relatively detailed schedule of the cost elements involved in installing optical fibre lines in buildings, notably based on invoices or quotations. This schedule must, at the very least, be detailed enough to make it possible to identify the different cost items needed to price the access offer published by this operator.

Moreover, in accordance with Article 4 of the ARCEP decision, the building operator will establish and keep up to date information on costs, tracing the expenditures made and providing enough detail to allow the Authority to audit it, as provided for in Article 3 of the decision. It is preferable that the building operator maintain appropriate accounts, at the municipality-wide scale, which trace costs and financial streams concerning the buildings that it is equipping.

II. Recommendation on the operational implementation of access

The operational implementation of access may require greater clarification on how responsibilities are shared between the players, and particularly between the building operator who establishes or manages the network, and the access-sharing operator who gains access to the network to be able to provide services to the building's residents.

To help with this clarification we need to turn to the Law on modernising the economy of 4 August 2008, which sets out three principles.

First, the building operator appointed by the property owner, under terms specified in CPCE Article L. 33-6, is responsible for the installation, upkeep, maintenance and replacement of the lines, in other words of the optical fibre network between the concentration point and the optical network unit located in the customer premises, whether residential or business.

Second, the building operator has the ability to contract a third party to perform all or a portion of the operations listed above, in accordance with Paragraph 4 of Article R. 9-4 of the CPCE. The building operator nevertheless remains responsible for these operations with respect to the property owner, notably in the case of any damages.

Third, the Law does not specify whether the building operator can demand that a access-sharing operator be required, or whether a access-sharing operator can demand that a building operator be required to perform certain operations. The role that each party plays would therefore appear to depend on the relationship between the operators with respect to access, the Law stipulating only that the building operator must grant all reasonable requests from other operators for access to the line. In any event, ARCEP is empowered to settle disputes between operators in the manner and under the terms stipulated in CPCE Article L. 36-8.

1. Exchanging information and network integrity

The flow of information between the building operator and third-party operators is crucial to the smooth operation of network sharing schemes inside the buildings.

To this end, it seems advisable that the Authority be able to verify that the relevant information is being properly transmitted to all of the concerned parties, with adequately detailed content and within the set timeframe. If the hypothesis of a centralized information system – which would be in charge of collecting information from building operators and distributing it to third-party operators – is one possible option, the actual need for such a system and the constraints involved in implementing it would have to be assessed beforehand. At the very least, it seems advisable that building operators make the relevant information that they have transmitted to other operators available to the Authority, along with the dates when that information was transmitted, to allow ARCEP to verify their compliance with information supply obligations.

In addition, in its Opinion No. 09-A-47 of 22 September 2009, the Competition Authority specifies that, "*the processes governing the flow of information, those provided for in the Decree of 15 January 2009, as well as those listed in Annex II of the decision* […]*, should be shared to avoid multiplying the number of exchanges between the players. On the one hand, because it is by and large the same information being exchanged and, on the other, this information is being transmitted to the other operators within a similar timeframe."*

To this end, and to avoid any interoperability issues due to format, terminology or any other features of the information being transmitted, ARCEP will continue the efforts being made in tandem with stakeholders within multilateral working groups, to define common characteristics for all of the information streams, including information concerning the prior consultations held by building operators in very high density areas.

Moreover, because the building operator is responsible for the integrity of the network, from the concentration point to the optical network unit, this responsibility should include implementing and keeping an up-to-date information system on the equipment that has been installed.

2. Connecting customers

Most operators are currently deploying the indoor portion of their network in two stages: first the riser, which stops at each floor, followed by the drop cable to the customer running from the floor terminal, or riser box, to the optical network unit inside the customer premises, which is installed when the customer first subscribes.

This second operation, referred to as "customer connection," can be performed in all cases either by the building operator or its sub-contractor, or by the access-sharing operator or its sub-contractor, when contracted by the building operator to do so. Here, operators appear to face different restrictions:

- as with unbundling, some access-sharing operators want to be able to send customers their terminal equipment, or box, via the post, and not have to make a service call to install it;
- others, on the contrary, want to offer customers a service call to install the equipment on the premises, whether residential or business;
- in addition, for competitive reasons, some access-sharing operators do not want the building operator to have any contact with their customers, and so want to perform all of

the installation and maintenance operations that require any appointment with the customer themselves;

- and, finally, in their capacity of building operator, some players want to have control over all of the operations performed in the building, citing the risks of diluting responsibilities and of losing information on the location of the fibre in the building, should numerous parties be involved.

Because of these conflicting views, and given the lack of both consensus and enough concrete experience in the matter, it is up to operators to negotiate how roles will be allocated amongst themselves, in such a way as to meet each parties' expectations as fully as possible, and in accordance with the three principles set out by the Law on modernising the economy, cited here above:

- the building operator's responsibility to the property owner;
- the building operator's ability to contract a third-party to perform certain operations;
- the building operator's obligation to satisfy all reasonable requests for access from third-party operators.

In any event, it is recommended that, at the very least, the operator or the sub-contractor installing the connection to the customer premises install all of the connections on the optical cable installed between the floor terminal and the optical network unit (ONU) inside the customer premises. The ONU installed inside the customer premises will have as many connectors as there are fibres contained in the installed optical cable (e.g. four).

3. Hosting and network access point operations

The following modalities are recommended when applying the building operator's obligation to make the necessary resources available to ensure that access is supplied under reasonable and non-discriminatory conditions, pursuant to Article 2 of the ARCEP decision.

Whatever the modalities used to make lines available at the concentration point, for either shared or dedicated fibre, the building operator must plan on a technical environment that allows other operators to connect to the concentration point. This may require the installation of passive equipment such as connectors and/or boxes.

Although the building operator is responsible for the installation and maintenance of this equipment, as they are necessary to ensure access to the line, such is apparently not the case with operational procedures performed at the concentration point. This may include splicing or cross-connection wiring operations, whose frequency will depend on other operators' commercial choices. While the building operator is not obligated to provide these services, it nevertheless remains free to offer them.

In practice, when the lines are accessed through a shared fibre, the operator involved will install a cross-connection box at the concentration point. It will provide access to a panel of connectors that corresponds to all of the customer premises served by that concentration point. Other operators will connect to it by installing an optical cross-connection wire that connects the equipment installed by third-party operators to these connectors.

When the lines are accessed over a dedicated fibre, the building operator must allow third-party operators to connect it to their network. To achieve this, it is recommended that each of operator's dedicated fibre be clearly separated, easily identified by third-party operators and accessible in a box or in a splice tray that will protect them up to the point of connection to the upstream network, at the concentration point. This box must also be adapted to the

environment in which it is installed, the goal being to have long-lasting equipment. To provide a concrete mark of the limits of responsibility, and allowing for certain exceptions, it is recommended that the fibres made available to other operators be preconnectorized at the concentration point.

4. Maintenance

In accordance with the Law on modernising the economy, the building operator is responsible for the maintenance of the lines between the concentration point and the optical network unit.

For maintenance operations performed on behalf of another operator, it seems reasonable to have these operators identify beforehand those instances where the failure or outage falls within the building operator's area of responsibility, i.e. located between the concentration point and the optical network unit. Past experience with the local copper loop and with FTTH networks deployed in Japan indeed appear to reveal that the vast majority of outages are tied to problems with services or to the section of the installation located between the optical network unit and subscribers' equipment, which is the responsibility of the subscriber's access-sharing operator.

It is recommended that a system of penalties for third-party operators be put into place for instances of faulty prior diagnosis, to encourage efficient management.

When the outage is indeed within the building operator's area of responsibility, said operator will repair this outage within a satisfactory timeframe, in accordance with its access obligations. It nevertheless seems reasonable that the access-sharing operator provide the building operator with relevant pre-diagnostic elements, notably prior information on the location of the outage between the concentration point and the optical network unit. This system, which is already in place between alternative operators and the local loop operator for the copper local loop, could enable the operator in charge of managing the infrastructure to repair outages within a satisfactory timeframe.

5. Quality of the installed network

The building operator is responsible for the quality of the network installed between the concentration point and the optical network unit, to the extent that it must supply access to third-party operators, "*allowing them to serve an end user,*" as stipulated in CPCE Article L.34-8-3.

It therefore seems necessary for the building operator to perform optical fibre continuity tests on the riser when installing the network. When several fibres are installed for each customer unit, it seems reasonable that the operator installing the connection to the customer premises test at least one fibre per continuous optical path installed, from the concentration point to the optical network unit.

6. Guarantee of minimal optical fibre testing from the concentration point to the customer premises

Regardless of the number of fibres installed, it is recommended that the building operator guarantee minimal testing of the optical fibre line between the concentration point and the optical network unit to ensure a satisfactory level of interoperability, regardless of the technology being used by the other operators.

It is necessary that any attenuation on each fibre running between the concentration point and the optical network unit not exceed a certain level. If, on the contrary, it did exceed that level, it could have an adverse effect on the quality of service.

Early efforts devoted to this issue were carried out by the "technical specifications" sub working group during the infrastructure sharing trials that operators conducted in the first quarter of 2009. This work made it possible to identify typical maximum attenuation values between the concentration point and the optical network unit, ranging from 1.5 dB to 2 dB depending on the deployment mode used, with a concentration point located inside the buildings.

Responsibility for this work was transferred to the "local loop expert committee", one of whose tasks will be to determine the maximum allowable attenuation between the concentration point and the optical network unit which will make it possible to achieve the goal of network interoperability.