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Unbundling – a solution to encourage high-speed access



AGENDA

- Introduction to local-loop unbundling
- Technical aspects
- Regulatory aspects
- Investment costs and benefits



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- **Introduction to local-loop unbundling**
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- **Introduction to local-loop unbundling**
 - The notion of local loop
 - Twisted pair access
 - The notion of local-loop unbundling



The new paradigms:



Speeds, uses, networks

■ Higher speeds

→ Residential

- > Exchanging photos, Television
- > Remote connections
- > E-administration, Local public services



→ Enterprises

- > Business communications, IT requirements

→ Public entities

- > E-administration: public buying
- > Paperless procedures
- > Schools and secondary schools: digital workspaces

■ Uses

→ Proliferation of applications and services

- > Leisure
- > Professional

→ Proliferation of users

- > Internet
- > Communities
- > Intranets

→ Proliferation of local dealings

- > Local servers
- > Service platforms

Need for very high-speed structuring and capillary infrastructures



Unbundling – objectives and stakes



- Developing access to ICT
- Bringing new players into the ICT value chain
- Enabling the broadest possible access – both individuals and enterprises – to high-speed networks
- Developing fair and sustainable competition
- Remunerating incumbent operators' investment in the maintenance and development of their local networks
- According visibility to the sector's players



Diversifying the offer



The local-loop unbundling called for by IAPs would give them technical freedom from the incumbent operator and enable them to provide the whole range of “**Data/Internet**” services:

- Permanent high-speed Internet connection
- VPN services
- Expanded communication services (videoconferencing, ...)
- ADSL TV
- Video-on-demand services
- VoIP services
- etc...



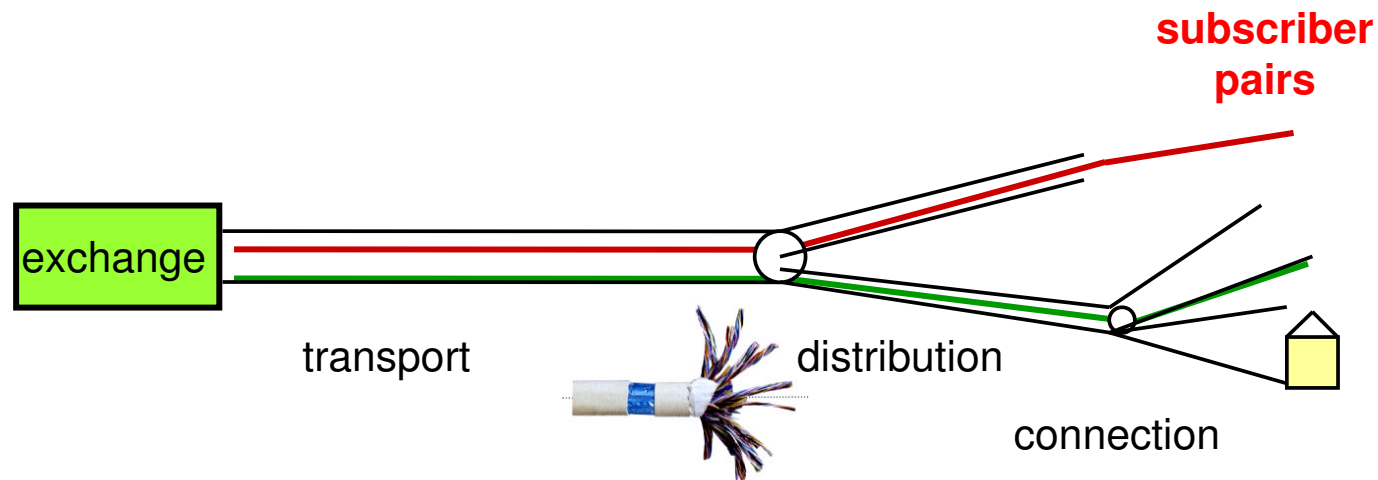
The notion of local loop



Local loop is the name given to the part of a telecommunication network that is situated between the end subscriber's telephone jack and the local exchange. More specifically, the subscriber terminal may be a telephone set, a modem or a complex installation (PABX) in a large company. On the other side, the local loop stops at the “distribution frame”, a cabinet in which all of the user lines are concentrated before being led off to the telephone exchange itself. The physical support for such subscriber connections is in most cases **a twisted copper pair**.



Twisted pair access



Star architecture: each subscriber has his own pair ...

... and his constant nominal bit rate.

This is by far the solution most commonly deployed ... by “incumbent operators”

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Whence the problem of “unbundling”



Unbundling of the local loop



The existing local network is the property of the incumbent operator. It is economically impossible for a new operator to replicate it in its entirety. However, having direct access to it is strategically important to a new entrant telecommunication operator, since it can then:

- manage, end to end, the network which links it with the customer base,
- put together differentiated offers.

Hence the decision at the regulatory body level that the incumbent operator must allow its competitors to have direct access to its local loop: **this is what is meant by local-loop unbundling.**



Unbundling of the local loop

Unbundled access to the local loop consists in the provision of bare copper pairs to the alternative operator, which then installs its own transmission equipment on those pairs. Use of the incumbent operator's local network is naturally remunerated by the user operator.

The user operator must place its transmission equipment at the end of the local loop to enable connection of those lines to its own network. It must be able to house that equipment in the immediate vicinity of the incumbent operator's distribution frame.

The option to colocate within the incumbent operator's premises must therefore be offered to third-party operators as a corollary to the unbundling offer.



Unbundling of the local loop



Unbundling consists in making certain major operator infrastructure components available to new entrant operators.

The local loop is the most coveted network element, owing to the volume of investment needed to cover an entire territory.

Local-loop unbundling spares new entrants from having to make major investments for a small number of subscribers (at the outset).



Unbundling of the local loop

Local-loop unbundling is a regulated wholesale offer on the part of the incumbent operator whereby alternative operators can have direct access to the copper pair.

To this end, they must first install their own equipment at the location of the incumbent operator's distribution frames.

This enables them to control end-to-end high-speed access and provide a differentiated service vis-à-vis that of the incumbent operator.



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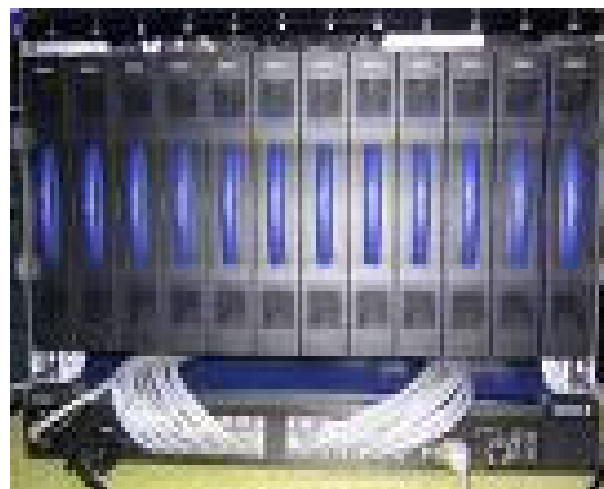
On the technical level, there are three items of equipment that play a particularly important role in the context of unbundling:

The **splitter** is a key component in xDSL technologies, since it serves to dissociate the high (data) and low (voice) frequencies carried over the copper pair to enable their separate processing on both sides of the subscriber line. The subscriber side is equipped with one (or several) splitter(s), with one on the network side.





- The **DSLAM** (Digital Subscriber Line Access Multiplexer) is the element which aggregates the data from several subscribers and brings them together onto a single high-capacity link. This DSLAM is installed close to the subscriber distribution frame, a piece of equipment installed within the incumbent operator's premises into which all of the subscriber lines from the geographic area in question converge.





- The **BAS** (Broadband Access Server) is the element used to control the quality of the service provided and to provide authentication in association with the RADIUS server. Given that it manages QoS and is involved in authentication, this network element is a critical component in the technical chain.



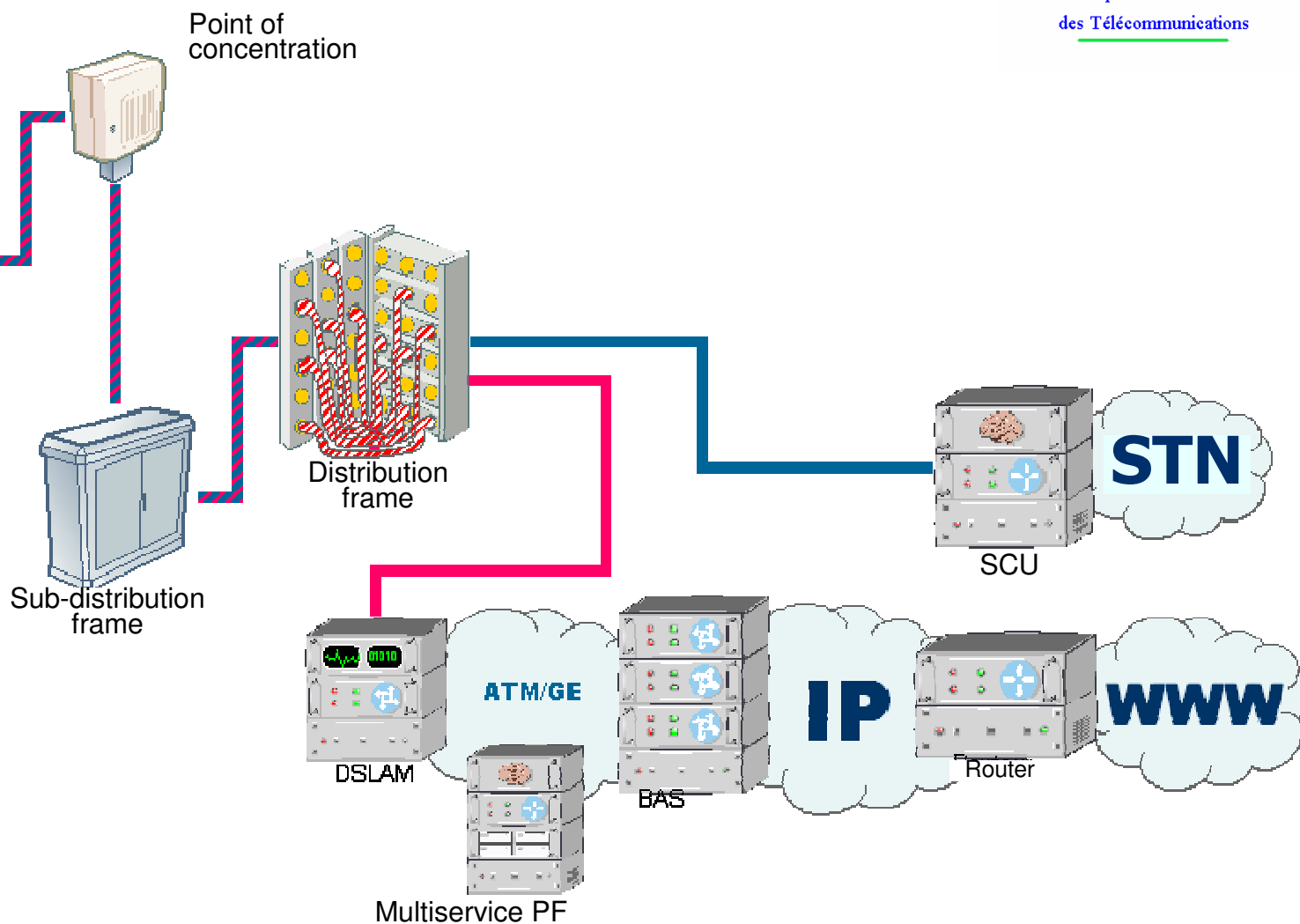
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Architecture



Ecole Supérieure Multinationale
des Télécommunications





Unbundling options

Two options may be offered:

- **Shared-line access or partial unbundling**
- **Copper-wire access or full unbundling**

In both cases, the incumbent operator retains ownership of the copper pair and is responsible for its exploitation and maintenance. The new entrant operator negotiates a service contract for such exploitation and maintenance, known as the SLA = service level agreement.



Shared-line access or partial unbundling

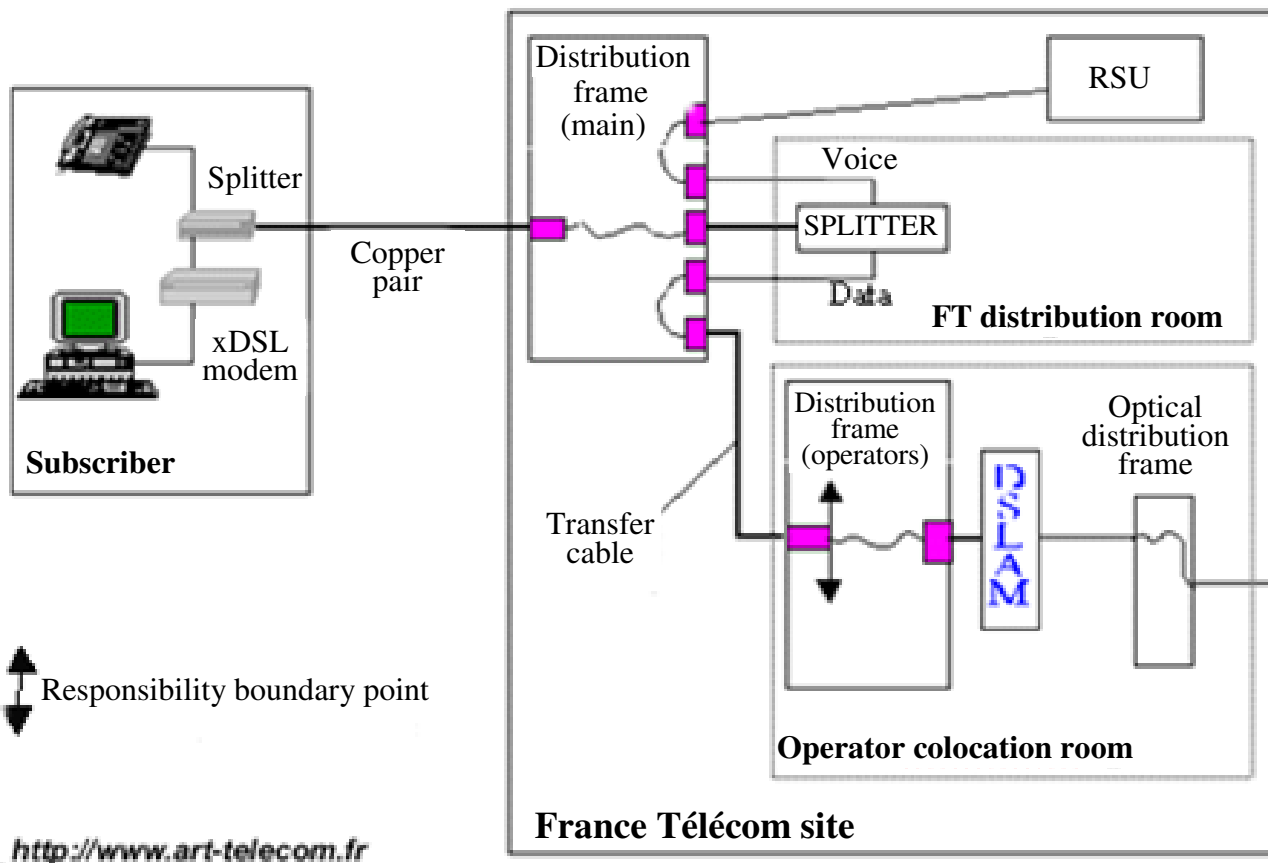
The incumbent operator leases customer access to the new entrant through a virtual permanent circuit, sharing the exploitable frequencies on the local loop.

The incumbent operator keeps the telephone traffic on the low frequencies and the new entrant operator provides high-speed services on the high frequencies.

This presupposes technical and commercial cohabitation (two invoices).

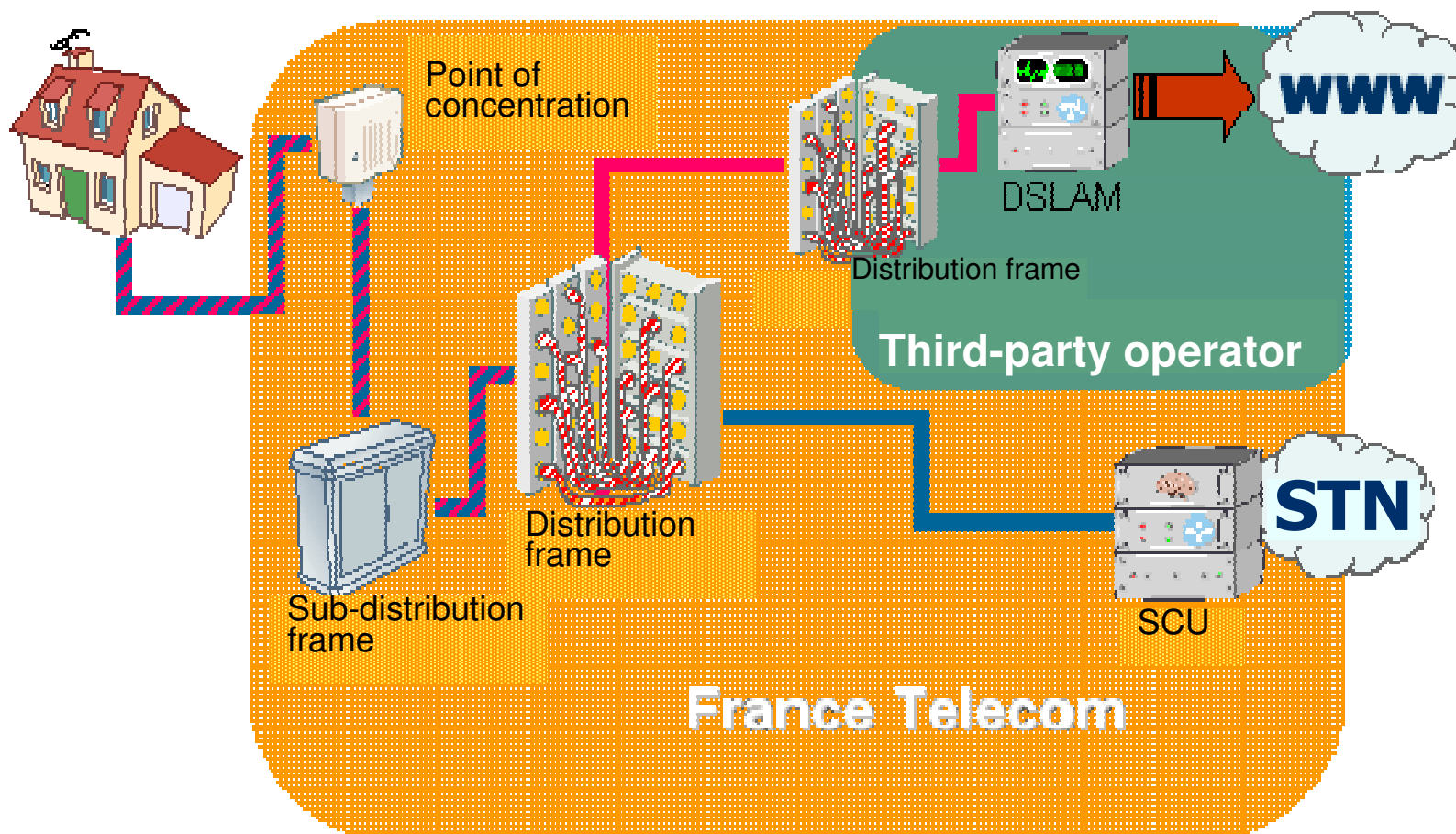


Partial unbundling





Partial unbundling





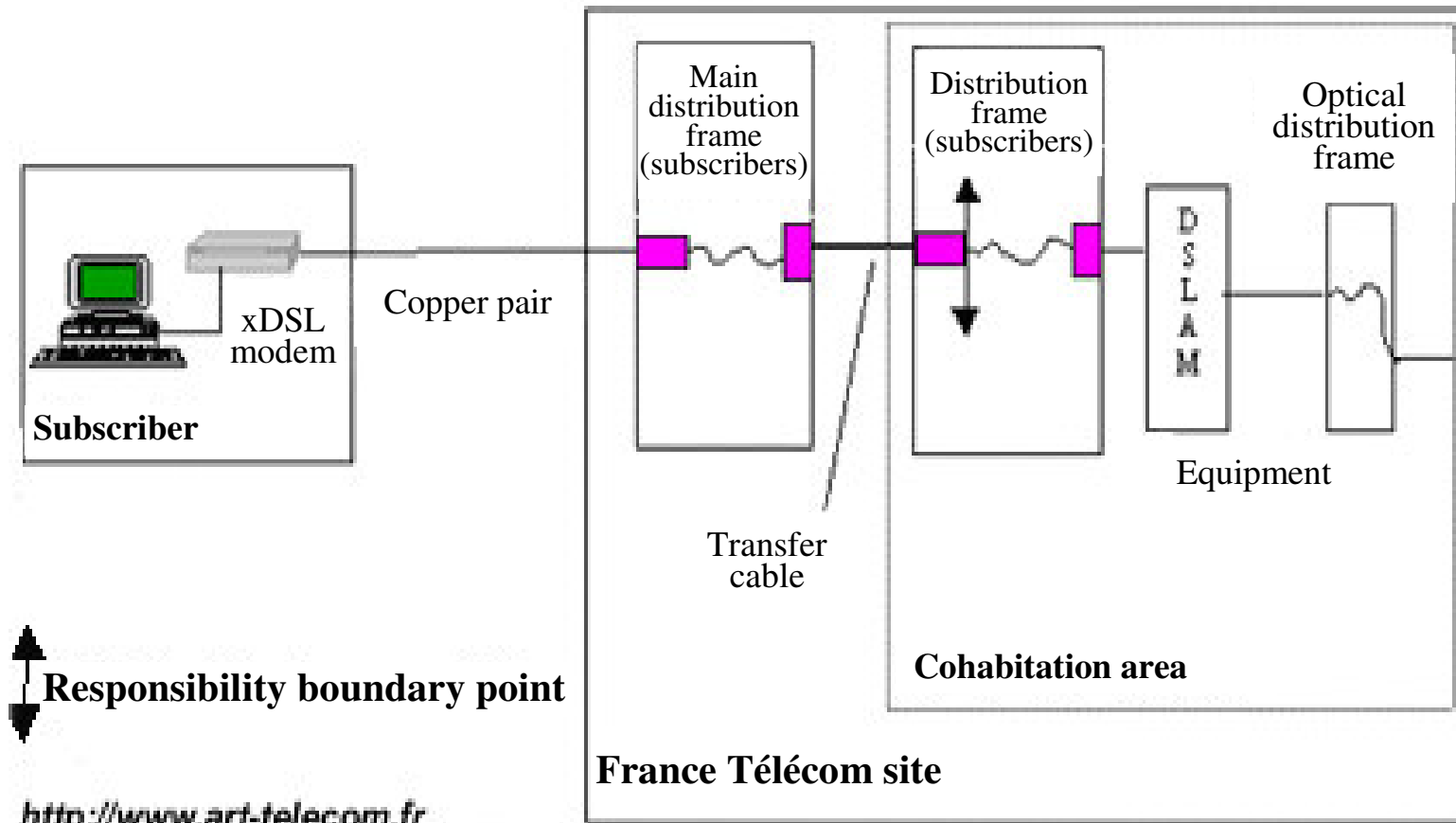
Copper-wire access or full unbundling

The new entrant acquires sole usage of the bare copper pair and benefits from all of the available frequencies.

The customer chooses the new entrant for all services and receives a single invoice from this operator.



Full unbundling

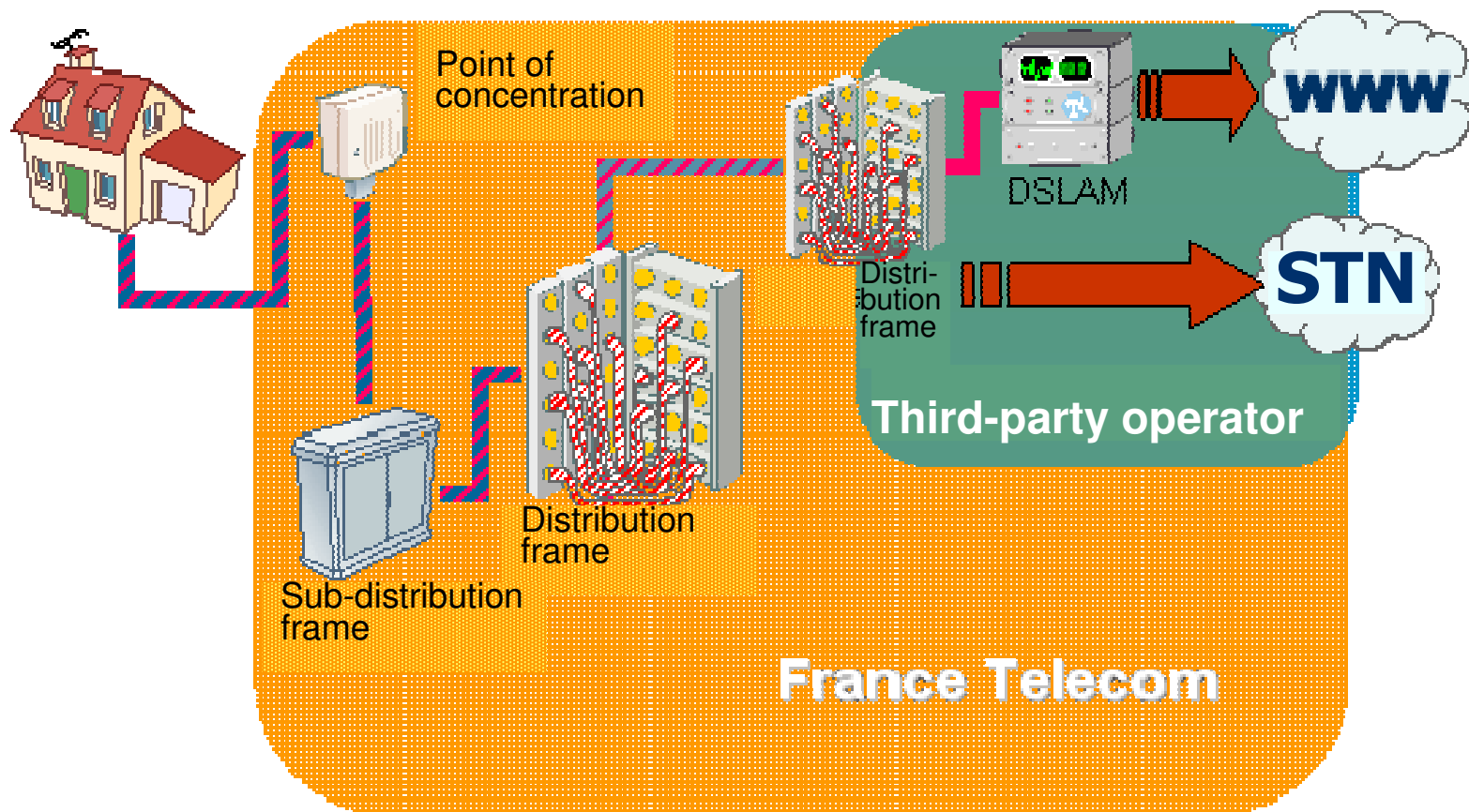


↑
↓
Responsibility boundary point

<http://www.art-telecom.fr>



Full unbundling





High-speed backhaul (“bitstream access”)

Bitstream is a type of wholesale offer whereby alternative operators are able to lease high-speed access facilities that have been activated by the incumbent operator. To this end, they must first connect up one or more delivery points on the incumbent operator’s network. This puts them in a position to offer high-speed retail services in areas where these have hitherto been unavailable in the context of unbundling.



Unbundling worldwide



- 1997: USA and Canada
- 1998: Germany, Finland
- 1999: Netherlands, Austria, Denmark
- 2001: France, Italy, Belgium, Spain, United Kingdom

Observed result: market cream-skimming

New entrants are targeting:

companies, professionals

affluent residential users (Internet and video)

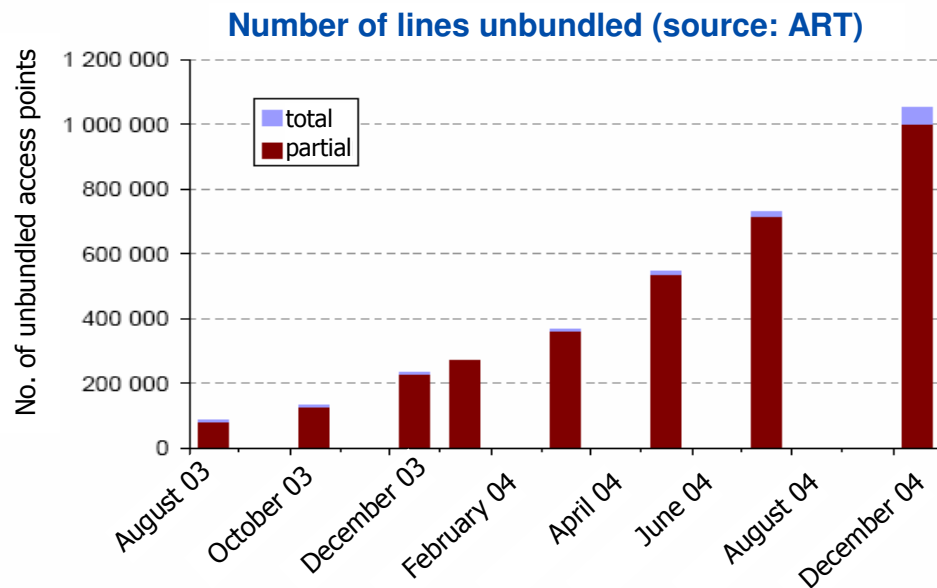
- 2004: Senegal , study conducted but no implementation



France: Status of unbundling in 2004

Growth in unbundling

www.idate.org



Unbundling accounts for 20 per cent of DSL lines in France at 1 October 2004



France: Status of unbundling in 2004



Evolution of unbundling

www.idate.org

© ORTEL
Updated to
September 2004

Unbundled DSL service coverage (Option 1)

	Number of communes	Eligible population	Eligible companies
Figures at end 2002	109	8 424 000	239 000
	0.3%	14.0%	20.2%
Figures at end 2003	346	14 808 000	348 000
	0.9%	24.6%	29.4%
Figures at end June 2004	1 477	26 068 833	569 349,00
	4.0%	43.3%	48.0%

As at mid-2004, unbundling accounted for 43% of the population, 48% of companies and 4% of communes



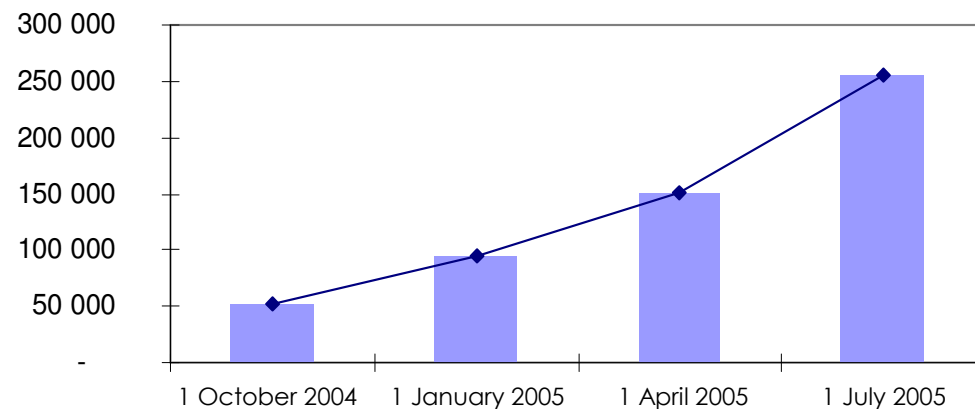
Emergence of full unbundling offers



Take-off of full unbundling

- Strong growth in full unbundling since January 2005
- 255 600 fully-unbundled access points at end June 2005
- France ranks third in Europe for full unbundling
- Move from partial to full unbundling

Evolution of the number of fully unbundled lines



Available offers

- **An average EUR 30 tariff for full unbundling offers**
 - Offers comprising at least high-speed Internet access and unlimited telephony
 - Maximum proposed speed of 20 Mbit/s
 - Possibility of cost-free telephone assistance
 - There are three operators proposing such options



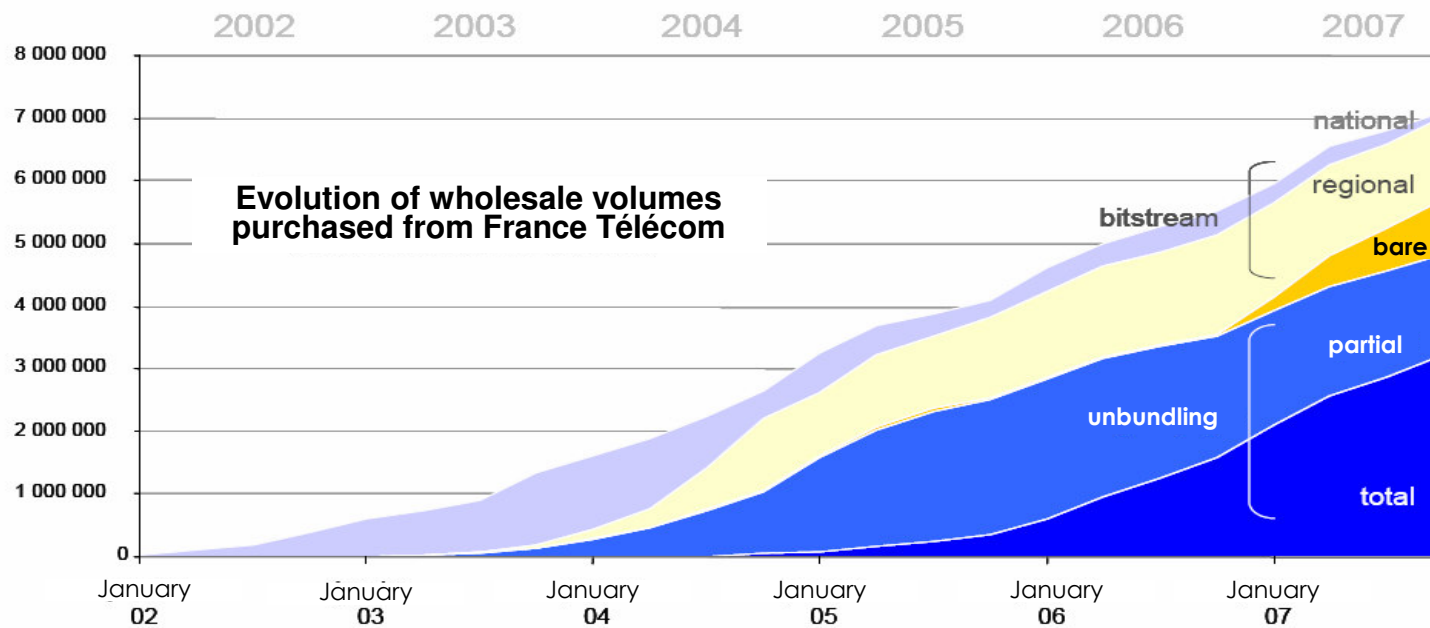
France: Status of unbundling at 11/2007



The distribution of wholesale access points is as follows*:

	unbundling <i>regulated offer</i>	bitstream (ATM & regional IP) <i>regulated offer</i>	national IP <i>unregulated offer</i>	total
with subscription to conventional telephone service	<i>partial unbundling</i> 1 621 000 access points (-61 000)	<i>conventional ADSL</i> 1 301 000 access points (-46 000)	100 000 access points (-119 000)	3 022 000 access points (-226 000)
without subscription to conventional telephone service	<i>full unbundling (residential and professional)</i> 3 215 000 access points (+350 000)	<i>bare ADSL + bitstream pro (DSLE)</i> 873 000 access points (+176 000)	X	4 088 000 access points (+526 000)
total	4 836 000 access points (+289 000)	2 174 000 access points (+130 000)	100 000 access points (-119 000)	7 110 000 access points (+300 000)

* in brackets: net growth in volume during the last quarter



Continued sustained geographic expansion of unbundling



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European Union regulatory framework

- Regulation EC/2887/2000 of the European Parliament and of the Council of 18 December 2000 on unbundled access to the local loop
- Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services (Framework Directive)
- Directive 2002/19/EC of the European Parliament and of the Council of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities (Access Directive)



ECOWAS additional act on access and interconnection



**Thirty-first ordinary session of the Conference of
Heads of State and Government**

Ouagadougou, 19 January 2007

**ADDITIONAL ACT A/SA 2/01/07 ON ACCESS TO
AND INTERCONNECTION OF NETWORKS AND
SERVICES IN THE ICT SECTOR**



ECOWAS additional act on access and interconnection

- Its objective: the putting in place of a regulatory environment that is accessible, transparent and equitable in the area of access to and interconnection of networks and services in the ICT sphere.
- It seeks the introduction of sustainable competition ensuring the interoperability of networks and services.
- It defines the objectives assigned to national regulatory authorities and establishes rights and obligations for operators and for companies wishing to obtain interconnection with and/or access to their networks.



ECOWAS additional act on access and interconnection



CHAPTER VI: OBLIGATIONS OF OPERATORS WITH SIGNIFICANT POWER IN A RELEVANT MARKET

ARTICLE 26: UNBUNDLING OF THE LOCAL LOOP

Member States shall ensure that, under the terms of the regulations:

- a) new entrants are authorized to have access to the local loop on the basis of a pre-established timetable;
- b) the new entrant has committed itself, through its terms of reference, to a minimal deployment of infrastructure, and that the dominant operators commit themselves to providing the new entrant with access to the copper pairs and to ensuring that they have the possibility of colocating within their own premises such as to facilitate unbundling;
- c) the unbundling offer, on both the technical and tariff sides, comprising the list of services offered at the request of the national regulatory authority, has been approved by the latter;
- d) the obligations of the national regulatory authority are established in regard to its monitoring, on the one hand, of the new entrant's access to the relevant information on unbundling and, on the other hand, of the electronic exchange of unbundling-related information between dominant operators and their competitors, as well as an unbundling timetable for liberalization of the fixed sector, with initial prioritization of unbundling by shared access;
- e) recommendations are in place on the practice of "scissor" tests for the purpose of comparing retail and unbundling prices in order to eliminate any anti-competitive behaviour on the part of dominant operators.



National provisions

- Decree on interconnection modified to cover unbundled access
- Decree specifically relating to unbundling
- Reference offer (technical and tariff catalogue or offer) on unbundling from the dominant operator
- Provisions relating to cost and tariff aspects (cost model for unbundled access)



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Unbundling – the economic stakes



- Unbundling (partial and full) is much more costly than backhaul (bitstream) offers, requiring the operator/ISP to invest in and maintain the DSLAMs and to connect distribution frames wherever its DSLAMs are installed.
- Indeed, with unbundling (partial and full), the more points there are to be connected within the territory, the more the investment will be burdensome and made up of fixed costs.
- On the other hand, unbundling means almost total freedom from the incumbent operator.
- The operator/ISP thus has considerable room for manoeuvre on the tariff and technical sides.
- Backhaul offers help to minimize (and above all vary) the necessary investment.



Main cost elements



In the case of an operator/ISP investing in partial unbundling, the main cost elements to be taken into account are:

- the monthly subscription paid to the incumbent operator for use of the copper pair;
- rental from the incumbent operator of a transfer cable for connecting the distribution frame to the operator/ISP's DSLAM;
- the DSLAM
Cohabitation costs arising out of the installation of the operator/ISP's DSLAM in the incumbent operator's premises;

Costs pertaining to the transmission network whereby the DSLAMs are connected to the operator/ISP's network.



Guiding principles for costing the local loop



Any evaluation of the costs of the copper local loop must:

- respect the principle of non-discrimination and thus establish, among other things, tariff consistency among the incumbent operator's various offers;
- encourage the incumbent operator to invest efficiently in the copper local loop so as to keep it in good condition and ensure renewal of the assets when necessary;
- encourage alternative operators to engage in efficient investment.



Procedure for costing the copper local loop – the case of France



Link with the market analysis decision

The regulation of unbundling is defined by decisions 05-275 and 05-277 of 19 May 2005.

- It hinges upon a public reference offer:
 - which ARCEP has the power to modify ;
 - which groups together all the facilities to which France Télécom provides access, as well as their tariffs, in the knowledge that :
- France Télécom must meet any reasonable request for access...
- ... under non-discriminatory conditions (internal/external, and between operators)
- ... at **cost-orientated tariffs**.
- Article 9 of decision 05-277 states

“Where full unbundling is concerned, this obligation will be subject to a further additional decision”

14 April

7 June

7 July

29 Sept.

+1
month

+1
month

December

Timetable for decision on procedure for costing the copper local loop

- Public consultation on ways to cost the copper local loop

- Summary of the consultation

• **Draft decision put to public consultation**

- Public consultation
- Notification of the European commission
- Adoption of the decision



The chosen method: current economic costs



Replacement costs

- Based on the “make or buy” principle: this method seeks to make neutral the client operator’s decision between leasing the infrastructure and reconstructing it. It is therefore based on the costs of reconstructing, to a new state, a copper local-loop network. This characteristic makes it inappropriate for the development of an infrastructure that is unlikely to be replicated during the period in question.

Historical costs

- The historical cost method is based entirely on the accounting of France Télécom. Depreciation is thus equal to the depreciation expense of the copper local-loop network, and the locked-up capital cost is calculated on the basis of the net book value.

Current accounting costs

- By comparison with the preceding method, the amortization and capital cost are modified to incorporate the asset price evolutions, i.e. both inflation and technological progress. The profile of the total annuities and the respective shares of amortization and capital cost, which change accordingly, are thus adjusted to enable the operator to regularly finance the necessary renewals to its network.

Current economic costs

- This method follows the preceding approach whereby account is taken of price evolutions. However, it also incorporates the principle of smoothing the total annuities through time, thereby making them less dependent on investment cycles. It therefore accommodates both the operator’s financing constraints and the regulator’s desire to limit the impact of investment cycles.



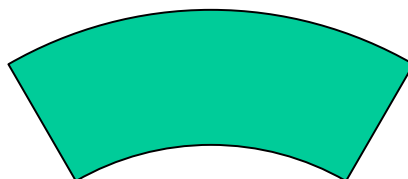
For further details:



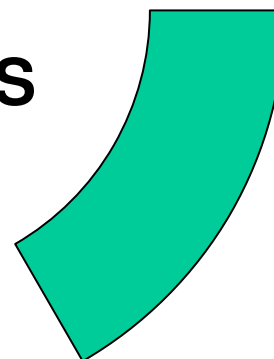
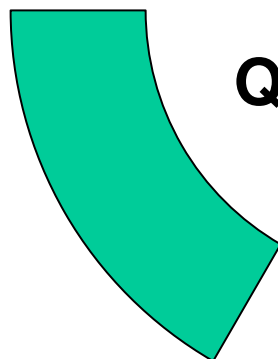
- See the cost model for unbundled access developed by ARCEP at: www.arcep.fr
- Decision No. 05-0834 of the Regulatory Authority for Electronic Communications and Postal Services of 15 December 2005, defining the method for costing the assets of the copper local loop and the method for balancing the costs applicable to full unbundling at: www.arcep.fr



**THANK
YOU**



QUESTIONS



ANSWERS



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