

***Experience gained in monitoring
IP interconnection agreements
since 2012***

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Agenda

1. Arcep's public statements on IP interconnection
2. Formal proceedings
 - a. Competition law case: Cogent vs. Orange
 - b. Administrative inquiry: Free practices
3. Data gathering campaign
 - a. Arcep's approach
 - b. Key (non-confidential) findings
4. Forward-looking considerations

2010 – 10 recommandations on net neutrality

2009 – Arcep starts working on net neutrality

2010 – Proposals and recommendations on internet and network neutrality, incl. IP interconnection (Proposal n° 8)

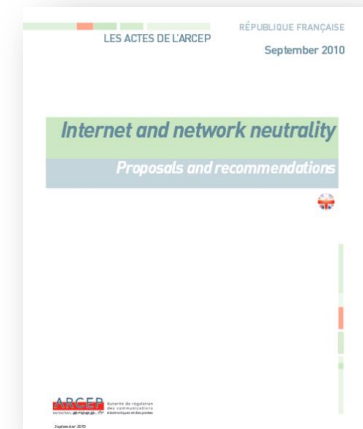
ARCEP recommends

- that parties providing end users with access to the internet grant, in an objective and non-discriminatory fashion, all reasonable requests for interconnection whose purpose is to provide these users with access to internet services or applications; [...]

... and announces that it will **periodically collect information on IP interconnection**

- Based in part on this information, the Authority will later assess whether it is necessary to implement more prescriptive regulatory measures in these market

Source: http://www.arcep.fr/uploads/tx_gspublication/net-neutralite-orientations-sept2010-eng.pdf



2012 – Report on net neutrality

2012 – Report on net neutrality to Parliament and the Government

Including a *State of the data interconnection market*, highlighting trends such as:

- ❑ Consolidation
- ❑ Vertical integration
- ❑ Growing proportion of peering (over transit)
- ❑ Differentiated peering agreements

... requiring vigilance on

- ❑ Vertical integration
- ❑ Paid peering

... but **discarding hard regulation / law**



Source: http://www.arcep.fr/uploads/tx_gspublication/rapport-parlement-net-neutrality-sept2012-ENG.pdf

Competition law case in France: Cogent vs. Orange

May 2011 – Cogent complains vs Orange to the Competition Authority, re-

- ❑ Opacity of Orange's interconnection offers (Tier 1 provider)
- ❑ Financial terms asked by Orange (paid peering)

Oct. 2011 – Arcep formally provides its opinion to the Competition Authority

- ❑ High traffic asymmetry ratio between Cogent and Orange
- ❑ Absence of discrimination or related sale transactions
- ❑ Tariffs not unrelated to underlying costs
- ❑ Balanced bargaining powers...
- ❑ ... providing end users are informed on the impact of interconnection on their QoS

Sept. 2012 – Competition Authority accepts Orange's commitments to

- ❑ Formalise an internal transfer protocol...
- ❑ ... and facilitate the regular supervision of its implementation

Administrative inquiry about Free practices

Nov. 2012 – Arcep opens a formal investigation about Free's interconnection practices

... after consumers association UFC-Que choisir has warned Arcep about difficulties for many clients of Free to access internet services provided by Apple, Youtube, etc.

July 2013 – Arcep releases its conclusions

- ❑ Non discriminatory use of traffic shaping at interconnection by Free
- ❑ Global congestion of Free's transit capacity...
- ❑ ... having negative impact on all traffic using transit to enter Free's network

This investigation showed the importance of transparency on ISP's practices

Free increased its transit capacity twice, when Arcep opened (publicly) and closed (publicly) its investigation.

Since 2012, data gathering and ongoing analysis

Decision n° 2012-0366, updated by decision n° 2014-0433-RDPI

Scope & frequency

- ❑ Group 1: Electronic communication providers in France → every 6 months
- ❑ Group 2: Companies operating networks interconnected with group 1 → on an *ad hoc* basis

Information collected

- ❑ Interconnected AS (incl. IXP)
- ❑ Location of interconnections
- ❑ For each interconnected AS and each interconnection location
 - Technical and financial terms
 - Capacities (installed and configured; minimum, maximum and average)
 - 95th centile volumes
 - both inbound and outbound
- ❑ *NB possibility to ask further questions to respondents in case of assumed congestion*

ARCEP's questionnaire – template

Sample response to the questionnaire on data conveyance and interconnection

. Date: 29 March 2012
 . Respondent's name: My Company
 . Contact information for the person in charge of responding to the questionnaire (main contact):
 First name: _____
 Last name: _____
 Title: _____
 e-mail address: _____
 Phone number: +33 1 00 00 00 00

Individual agreements with other AS

For each AS owned, please provide information on each point of interconnection/internet exchange point ("individual agreement") and on the cumulative value, with the 20 main partners and all partners after the 20 largest with AS marked "FR" or "EU" and sharing a total capacity of > 1 Gbit/s. Each point of interconnection/internet exchange point, and the cumulative value, must be given a separate row in the table.
 - capacities entered into column H are bidirectional/duplex (i.e. the sum of incoming and outgoing traffic)
 - you are free to choose the method used to calculate traffic streams entered in columns L and M, but ideally the 95th percentile for the period in question (please indicate the exact calculation method used at the end of the questionnaire; cf. supplementary questions)

Identification No.	Name of AS #1/ASN	Name of AS #2/ASN	Start date	Partner's name & contact information	Type of relationship	Financial terms & conditions	Pricing scheme (and rates)	Capacity (Gbit/s)	Information on the Pol/IXP traffic exchanged during the 6 months in question					Remarks
									Country	City	Point of interconnection (or name)	Outgoing (Op. #1 to Op. #2)	Incoming (Op. #2 to Op. #1)	
1	AS 1 / 1231	AS 2 / 1232	01/02/2004	Company XXX Postal address [e-mail address]	1:n	Paid	Set-up fee: 100,000 Recurring: 100,000 a year	10	France	Paris	AS2	5	8	
2	AS 1 / 1231	AS 3 / 1233	15/05/2001	Company XXX Postal address [e-mail address]	n:1	Paid	Set-up fee: €100,000 Recurring: €10,000 per Gbit/s	5	France	Paris	AS1	3	2	
3	AS 1 / 1231	AS 9 / 1250	15/05/2001	Company XXX Postal address [e-mail address]	n:1	Paid	Set-up fee: €100,000 Recurring: €10,000 per Gbit/s	3	France	Marseille	AS1	2	1,5	
4	AS 1 / 1231	AS 4 / 1234	01/07/2003	Company XXX Postal address [e-mail address]	1:1	Free	N/A	5	France	Paris	FranceIX	2	2	
5	AS 1 / 1231	AS 5 / 1235	03/02/2005	Company XXX Postal address [e-mail address]	1:1	Paid on conditions	Recurring: €10,000 per Gbit/s beyond a ratio of 2:1	5	France	Paris	Equinix	2	1,5	
6	AS 1 / 1231	AS 1 / 771	01/01/2000	My Company Postal address	1:E	Free	N/A	20	France	Paris	AS1	2	12	
7	AS 1 / 771	AS 1 / 1231	01/01/2000	My Company Postal address	E:1	Free	N/A	20	France	Paris	AS1	12	2	
8	AS 1 / 771	AS 6 / 1236	01/01/2002	Company XXX Postal address [e-mail address]	1:1	Paid on conditions	Recurring: €10,000 per Gbit/s beyond a ratio of 2:1	20	France	Paris	AS1	8	9	
9	AS 1 / 771	AS 7 / 1237	04/07/2010	Company XXX Postal address [e-mail address]	1:n	Paid	Set-up fee: €100,000 Recurring: €250,000 a year	50	USA	New York	AS7	10	25	
10	AS 1 / 771	AS 8 / 1238						70				10	42	
10.1			01/05/2001		1:E	Paid	Set-up fee: 100,000 Recurring: 300,000 a year	50	USA	New York	AS8	5	22	
10.2			01/05/2001		1:E	Paid	Set-up fee: €100,000 Recurring: €300,000 a year	20	The Netherlands	Amsterdam	AS8	5	20	
TOTAL								208				56	105	
of which E:1								20				12	2	
of which n:1								8				5	3,5	
of which 1:1								30				12	12,5	
of which 1:n								60				15	37	
of which 1:E								30				12	54	

Agreements at an IXP

Identification No.	Name of AS #1/ASN	Name of IX	Start date	IX contact information	Type of relationship	Financial terms & conditions	Pricing scheme (and rates)	Capacity (Gbit/s)	Information on the internet exchange traffic exchanged during the 6 months in question					Remarks
									Country	City	Point of interconnection (or name)	Outgoing (Op. #1 to Op. #2)	Incoming (Op. #2 to Op. #1)	
11	AS 1 / 1231	Equinix	03/02/2005	Postal address [e-mail address]	1:1	Free	N/A	5	France	Paris	Equinix	2,2	2,3	
12	AS 1 / 1231	FranceIX	01/07/2003	Postal address [e-mail address]	1:1	Paid on conditions	Recurring: €10,000 per Gbit/s beyond a ratio of 2:1	5	France	Paris	FranceIX	2	1,5	
TOTAL								10				4,2	3,8	

. Calculation method used. If 95th percentile, please specify: frequency of sampling (e.g. every 15 minutes) and reference period (e.g. per month, 95th percentile for the month)

Quarterly average of 95th percentile of daily traffic (95th percentile calculated over the course of a day, traffic measured every 10 minutes).

Key findings

ARCEP will publish its key findings as part of the mid 2017 report on the state of the Internet in France

“Supervising without interfering”

a. Keep on monitoring interconnection in France

... in order to be able to react swiftly in case of necessity

NB: Arcep will also stay closely in touch with the interconnection experts community in France (France-IX, FrNOG, ...)

b. Strengthen its QoS monitoring workstreams... and the associated information provided to end users

...in order to incentivise ISPs regarding the openness of their interconnection policy

c. Investigate new market developments, on an *ad hoc* basis

e.g. internal CDN, local interconnection (Marseille, ...), transition to IPv6, etc.

d. State of the art of Internet in France

... in order to take advantage of the data and lessons learned from the data gathering cycles since 2012, in a report outlining the interconnection of data

NB: this report will also encompass net neutrality, quality of service, etc.

Thank you for
your attention

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