On the FCC Open Internet Order

Preface

The main purpose of this document is that of analyzing the latest decisions (Open Internet Order) by the US Federal Communications Commission (FCC) and to evaluate if and how the traffic management rules described in the Order can be used as a cornerstone of similar measures to be adopted in Europe on the Net Neutrality. The Open Internet Order provides, in the opinion of many stakeholders, strong guarantees for an Open Internet and for these reasons can be seen not only as a useful instrument able to create a convergence on the internet management rules between both sides of the Atlantic, but also as a possible compromise between the positions of the UE Council, the Commission and the European Parliament, now locked in a political impasse on the critical issue of net neutrality. 1. Open Internet Order FCC

The Open Internet Order adopted last February by FCC defines new net neutrality rules that substitute those defined by FCC in 2010 (against “blocking and unreasonable discrimination”) and subsequently cancelled by the Verizon vs. FCC sentence of 2011. In that sentence, the Court concluded that in case of discriminations by the network operators (in the following the Internet Service Provider or ISP) the juridical basis of the role of conduct appeared not sufficiently founded. For this reason the FCC decided, in its Open Internet Order, to recall, strengthening the basis of its decision, the Title II of the Communications Act (1934 - “Common Carrier Provision”).

This last decision produced loud protests of the ISPs. In fact, US operators feared that the reference to the Title II could be the first step towards a set of new rules to force a network opening (eg. unbundling), analogous to those present in the European legislation but not in the US one. For this reason the FCC declared its willingness to apply a light version of the Title II defined as “XXI century Title II”. Thus a Title II able to provide a strong juridical basis for the decisions on the Net Neutrality but, at the same time, an FCC committed to implement it in a much more restrictive and appropriate way considering its potential.

This interpretation is, as mentioned, very critical. To date, it was already subject to 7 requests of judgment (or petitions), and in the opinion of distinguished jurists of our working group (Bassan) is likely to fall. In any case, is possible to observe that, at the time, the use of Title II as a basis for decisions of FCC on Net Neutrality makes the US and the European legal frameworks closer. The two legal ecosystems are still very different and any tentative to import the US model in the European legislation scenario should take into account the specific nature of EU juridical framework (Bassan, Gambino and Sica). Consequently, it seems necessary to set a general principle that, based on the rule "no unreasonable interference or disadvantage to consumers or edge providers", protects and effectively reconciles the interests of consumers, seen as users of an essential service not only of economic interest (as in art. 36 EU Charter of Fundamental Rights) and is based on general principles - clearly stated in the European framework – able to protect competition by vigorously acting on the general structure of previously mentioned interests. The reference is, of course, to the principles of non-discrimination, proportionality and transparency.

Another key element of the FCC Order is the decision to apply all the rules of net neutrality also to mobile networks. This case marks a significant difference compared not only to the FCC Decision of 2010 (in which the mobile was kept out) but also respect to the European regulation. The decision not to apply the rules of neutrality in the mobile sector was, in the past, justified essentially by greater needs in terms of "network management" of the mobile networks, designed to serve the users in variable and more severe situations of
coverage than those experienced by fixed networks. The today fixed-mobile convergence and the continuous improvement of the mobile network quality (LTE) accompanied by a strong pressure of the american public opinion (attracted by the sole use of mobile networks, as connectivity technique, but worried about losing, in that case, its right to an open Internet) prompted the FCC to apply the rules that we will discuss in the next section, both to fixed and mobile networks.

In particular, in Europe the mobile networks are regulated in a lighter way because it was always envisioned that the infrastructure competition between operators would provide, by itself, an adequate guarantee of an open Internet. However, we must point out that if the infrastructure competition can ensure a competitive market, the same cannot be said for Net Neutrality (Open Internet) that has to be guaranteed regardless of the number and the size of the ISPs on the market. Thus on this very sensitive point, an alignment with the US position would be desirable and, at the European level, the rules for mobile operators should be similar (though not necessarily identical) to those applied to fixed operators.

Obviously, the problems posed by mobile networks are different from those related to fixed networks. For example, the contracts are often characterized, on a monthly or weekly basis, by a "capacity cap" and so on widespread approaches like the "zero rating" (where some applications may continue to exchange data with the network also after reaching the "cap"); situations that has to be examined in terms of possible violations of the Net Neutrality principle.

The FCC decision does not prohibit "ex-ante" the "zero-rating" practice but fixes it, along with many other cases that will be examined in Section 1.2, between the practices left to the free trade negotiations between the parties and examinable only ex-post, case by case, for possible violations of the net neutrality principles. It is a prudent position of "wait and see" that, together with the general and shared request for a European common position (Gambino, Pollicino), might be a reasonable compromise between the different views expressed around the working group: from the absolute prohibition invoked by Scorza and Quintarelli, to the "wait and see" position proposed by Marino and Ventre up to the approval of certain conditions by Preta.

Let’s see now what, in details, is allowed and what is prohibited in the FCC document.

1.1 What is prohibited

The long and complex text put online by the FCC has many key points and describes a new scenario for the Net Neutrality based on three key rules ("bright line rules"): "no blocking", i.e. each IP address within the Internet must be accessible without restriction; "No throttling", i.e. ISPs cannot block or slow down traffic with a specific origin or a specific application, and finally "no (third party) paid prioritization", i.e. the ISPs cannot give higher priority to traffic from a specific source or a specific application based on commercial agreements with third parties like "content providers", "edge provider", or more generically with "over the top" (OTT) operators. This rule prevents the presence of economic agreements between ISPs and OTT to realize "fast lanes" able to collect and deliver traffic from the OTT to particular ISPs end users.

However, a "fast lane" can be built for explicit and transparent agreement between the end user and the ISP: the ISPs may offer premium services to their subscribers, provided it does not influence the freedom of choice of the consumers and provided that the rule of "reasonable" non-interference or disadvantage compared to all other consumers or edge/content providers is respected.

This position is widely shared among all the participants of the working group and finds a specific transposition in the bill, signed by Quintarelli, where is specified (Article 2, paragraph 3) that "operators can offer in the market value-added services with prioritization of traffic classes in the access network to satisfy a user request related to its access network segment. .. the best effort access to the Internet must in any case
be the basis operator offer, which can provided with additional performances based on differentiated traffic management”.

The "best effort" access is seen as a right of the users and it must be guaranteed by an open and neutral Internet (article 3 paragraph 5 of the bill previously mentioned): "In order to prevent degradation of the service access to the Internet and the obstacle or slowing down of the traffic over the same network, the Authority for the Communications (i.e. AGCOM) may establish appropriate minimum quality standards of service that must be respected by the companies that provide it."

The key quality parameters in this context are, essentially: the latency (delay), throughput (effective bandwidth) and packet-loss (IP packets loss rate). In the context of "best effort" services does not make sense to speak about "minimum standards" that must be respected, and at the same time the focus on the minimum to be granted can be detrimental for the user experience asset. Each level of service on the underlined parameters should be expressed on a statistical basis (for example: value should always be respected except for the 5% of the time) and the reference values should be, as already happens in Italy, autonomously determined by the operator and made public (according to the principle of "transparency" often underlined by FCC).

This way is a first step towards translating, with technical rules, the generic term "reasonable" used in the FCC Order. It should be stressed that the detailed technical rules on the measurement configuration need technical in-depth analysis starting from the work already done by AGCOM.

In conclusion, ISPs must manage in an absolutely neutral way the "best effort" service on their networks and are not allowed to change the priority of the packets in the IP network routes on the basis of OTT payments. Not only that, the treatment should also be the same for the same class of applications. For example, in the case of VoIP telephone calls it is not permitted to discriminate between the ISP traffic and the VoIP traffic handled by the OTT (see Skype or WhatsApp) using priority techniques, in addition to the aforementioned throttling techniques.

The prohibition of IP packets prioritization is removed for business services, and machine-to-machine, as well as in the case of "traffic congestion" situations. In this case, "blocking", "throttling" and "prioritization" are again permitted within a "reasonable network management" (rules for a reasonable network traffic management). The translation in technical rules of the generic term "reasonable network management" is very difficult. The FCC has tasked this issue to a working technical group managed by its Chief Technology Officer. It is a technically complex matter and a position alignment between US and European would be more than desirable.

1.2 What is allowed

A key point in the interpretation of the logic of the FCC decision is that the three "bright line rules" apply to broadband access services for mass consumer applications and the “no paid prioritization” applies only to the IP network protocol level in the Internet access. Therefore it does not apply to higher protocol levels, like TCP / HTTP. Therefore are excluded from the Open Internet Order FCC:

1- Business services, virtual private networks, hosting services on servers and data storage services; in particular it is therefore excluded the popular services aka CDN (Content Delivery Networks) providing for the storage (cache) of video content and their optimal management in the interconnection points, both inside the ISPs network at various levels, both at the exchange point between the networks: NAP (Neutral Access point) / IXP (Internet eXchange point);

2- interconnection services between providers (ISPs and Content / Edge Providers) at all the network levels;
The first point to outline is that the interconnection services between different networks are traditionally deregulated and work on a commercial basis. This practice has been called "peering" for a long time, referring to a native data exchange between "equal", with a balanced amount of traffic exchanged by two interconnected networks with a substantial free service. The peering is a service that can be also paid, particularly in the interconnection with backbone/transit ISPs (such as Akamai and Level 3). Moreover, with the huge increase of video traffic and the rise of OTT services like Netflix and Google, the idea of "equality" fails.

The FCC decided (exclusions 1 and 2) not to apply the rules of neutrality at the interconnection. However, the FCC will watch and see if the market is able to regulate itself: FCC reserves to intervene in a market subject to the Title II of the Communications Act. Therefore, it is permitted to create "fast lanes" through and "above" the Internet by using specialized CDN. These networks are used to accelerate the delivery of video content to ensure a better quality of service perceived by the end user, the "quality of experience" (Quality of Experience, QoE), and are based on protocols higher than the IP network protocol, starting from the TCP transport protocol. OTT can use, and pay for, a CDN network developed by the ISPs, (both backbone / transit and local), or it can create its own CDN network and paying for the interconnection with the ISP's local network at various levels, including those related to local and transit exchanges (like Google and Netflix).

From this point of view, the Open Internet Order allows a direct transfer of money between OTT and Telcos, different from the "paid prioritization". Therefore, the scheme allowed by FCC rules is based on a two-sided market in which the ISP will be remunerated both by the user and the OTT. The use of CDNs is popular in US (Netflix has set up paid interconnection agreements to reach the users of the largest ISPs even before the FCC published the Open Internet Order in 2015) and is spreading in Europe, with the rapid diffusion of video distribution platforms like Netflix, Google and Amazon.

These are, obviously, violations of the absolute principle of Net Neutrality. In fact, some content (those transported on the best CDN) are characterized by more efficient transport conditions and provide the user with a much better "Quality of Experience" than that afforded to contents that do not use the CDN, but rely on the "best effort" network. Thus, we have (at least) a two-level network.

Is this acceptable? Do we must decide a priori to prevent the development of proprietary CDNs or to prohibit the interconnection of CDNs with the "best effort" networks where Net Neutrality rules apply? This is not an easy decision. We, as mentioned, have the possibility that the interconnection of CDN alter the neutrality of the Internet; but on the other hand, the choice of an "a priori" prohibition of a scheme where the ISP is paid by both the network users would be analogous to an "a priori" ban of the two sided television broadcasting "pay" market (Advertising→Broadcaster←User) where the advertiser pays the "broadcaster" to reach the user.

The positions of the working group on the CDN interconnection issue are all, although with different nuances, favorable to the position taken by the FCC and therefore (Pollicino, Gambino, Scorza, Preta, Sassano) are open to the possibility of interconnection between CDN and ISP networks, also based on payment. Obviously, reserving "ex-post" interventions in the case of closed attitudes ("gatekeeping") by ISPs (Marino). In the discussion appeared preferable an ecosystem made by interoperable CDNs (Pollicino) but doubts raised on the technical possibility to make it happen and fears popped up on the possible users "lock-in" (Ventre). Quintarelli stressed that the regulation of CDN interconnection is outside the scope of the "best
efforts" Internet boundaries and therefore, as decided by the FCC, does not need "ex-ante" regulatory intervention.

1.3 Neutrality of applications

The theme related to the neutrality of the applications is not addressed by the Open Internet Order FCC but should certainly occupy an important place in the European Digital Agenda. It is important to outline the risk that, thanks to the efficiency and pervasiveness of their hardware infrastructure and to their position in the market, the OTT (Netflix, Whatsapp, Amazon Streaming) could have the ability to determine through which applications the user will experience the highest QoE, thus closing the access to new OTT and restricting the freedom of choice for citizens.

The Open Internet Order decides not to regulate the interconnections between OTT and ISP and thus allows to the OTT already present in the market an efficient use of their CDNs to ensure to its users the highest QoE. For the FCC this "case-by-case" interconnection regulation does not put in danger what the document calls "virtuous cycle": innovation in terms of content and services (by the edge provider), increased quality of the user demand and related increase in broadband infrastructure investments. The US concern on the difficulties that new OTT will face with this scheme is obviously less strong than that of Europe (all the main OTT are from US).

Should Europe adopt rules that favor US OTT? The first answer to be given to this objection is pragmatic: in Europe the two sided model could have a positive role for the ISPs and for the National governments to stimulate the development of new generation fixed and mobile networks.

But this is not enough. The theme of the OTT and the theme related to the possibility that their position of dominance in the market related to content and smart distribution networks (CDN) lead to very harmful abuse and market closures to consumers is extremely sensitive for the economy and the democratic use of Internet. Just think about the terminal operating systems, to the customer authentication, to the sale of applications: all these services are provided by proprietary and absolutely not interoperable standards, in particular not interoperable and not regulated for telephony and messaging services competitive with those of Telcos. So in addition to net neutrality, there are problems of neutrality at the applications level, the so called app neutrality, including:

- neutrality of the terminals, for example to prevent the installation of programs and the use of content not consistent with the OTT business strategy;
- neutrality platforms (application store);
- neutrality of services and applications;
- neutrality of the search engines: search engines manage the Internet access through proprietary ranking algorithms and techniques based on compensation (economic) for increased visibility.

Therefore, the new EU rules on net neutrality should be accompanied by a first step of construction of the rules of neutrality in the field of terminals, platforms, services and applications. This in order to reduce the asymmetry in treatment between ISP and OTT, not only with regard to transparency, privacy, taxes and copyright, but also on the great issues of consumer protection against the closures and the abuse of rights in the network that are made "over the net".

A first significant step in this direction would be to apply to telephony and messaging made by OTT the principles of interoperability, lawful interception, privacy, data retention and emergency calls and, in parallel, the principles of the interoperability of platforms and services applications, including the portability of the associated personal data.
2. Conclusions

The Open Internet Order made by the FCC establishes a suitably lightened and modernized version of Title II of the Communications Act (1939 - "Common Carrier Provision") at the basis of the new rules for Internet traffic management and closes, in this way, the gap between the US and the European legal and regulatory framework. To apply the basic principles of the Open Internet Order inspired by Obama and to draw strategic lines of government Internet traffic similar to those of US are great opportunities to build a unified, open and inclusive Internet not designed within ephemeral continental borders.

The FCC decision ensures clear and binding Net Neutrality rules within the "best effort" network. Make it accessible to everyone in its entirety ("no blocking"), prevent the possibility that "gatekeeper" limits traffic between specific users and specific applications ("no throttling") and allow the citizen-user (and prevent it to a third party) to pay to change the priority of its packets ("no (third party) paid prioritization"). In short, the "bright line rules" ensure that the network of each ISP (regardless of its size and the number of users who serves) complies with all the fundamental principles of Net Neutrality.

The FCC rules also guarantee the creation and the development of new networks. Networks based on large "data centers", using distributed "cache server" at the edges and inside the ISP networks (in places of interconnection) to manage optimally the growing demands of data (especially video). In short, a smart "cloud" intended to ensure high Quality of Experience to the user combining its efficiency to that, essential, of fiber based new access networks.

The FCC rules do not regulate "ex-ante", in terms of ways and fees, the interconnection of these networks with the "best effort" networks. They leave this task to free bargaining between ISPs and content/service providers (or edge provider or OTT). The scheme allowed by FCC rules is the one related to a two-sided market in which the ISP will be remunerated both by the user and by the OTT and therefore will receive from both these players the resources to develop its own network.

However it is necessary to ensure that the position of ISP and OTT will not change from intermediaries to "gatekeeper". For this reason the interoperability of devices, services and applications and a more rigorous and effective application of antitrust rules in relation to the distribution of Apps and indexing services (for example: anti-competitive agreements and abuse of dominant positions) become a target to be pursued in parallel to the development of next-generation networks.
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