

CLOUD COMPUTING FROM EU COMPETITION LAW PERSPECTIVE

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Cloud computing is a new model for delivering information technology services in which data and applications are stored on a remote server and accessed through the Internet from anywhere in the world. This paper is to be viewed as an introduction to cloud computing competition problems within the EU legal framework. Rather than focusing on the positive side of EU competition law, we focused on its flaws and loopholes and the ways of addressing real and serious problems when the European Commission is unable to react due to the current legislation. The issues of open standardization, interoperability and data portability should be analyzed more closely as they represent effective means of protecting competition in cloud computing. The paper is aimed to give an overview of some competition issues in this fast-developing sector.

Key words: *Cloud computing, competition, lock-in, data portability, interoperability*

1. Introduction

In simple terms, “cloud computing” can be understood as the storing, processing and use of data on remotely located computers accessed through the Internet.¹ This means that end users have the ability to use almost unlimited computer power without having to invest large amounts of money into upgrading their own systems. Cloud computing is currently viewed by many in the industry as the “next big idea” that will see major information technology companies vying to exploit it.² With cloud computing even the smallest of businesses can get access to larger markets and governments can make their services more attractive and efficient while at the same time cut their spending.

Although there is a variety of definitions of cloud computing, the recently developed set of

definitions provided by the US National Institute of Standards and Technology (NIST) has become the most authoritative. Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.³ According to the same document, there are basically five main characteristics of cloud computing. (1) On-demand self-service means that users have access to cloud computing services automatically as needed, without requiring human interaction with each service provider. (2) These services are available over the network and accessed through a variety of devices such as PCs, laptops and smartphones for instance. Such ubiquity distinguishes cloud computing from the previous stages of evolution in computing: cloud services are accessible from any point, through any network, using any device.⁴ (3) The provider’s computing resources are pooled to serve multiple consumers using a multi-tenant model, with different physical and virtual resources dynamically assigned and reassigned according to the consumers’ demand. There is a sense of the location independence as its consumer generally has no control or knowledge of the exact location of the provided resources but may be able to specify the location at a higher level of abstraction (e.g., country, state, or datacenter).⁵ (4) Capabilities can be elastically provisioned and released, in some cases automatically, to scale rapidly outward and inward commensurate with demand. To the consumer, the capabilities available for provisioning often appear to be unlimited and can be appropriated in any quantity at any time.⁶ For suppliers based on a server-client model, this

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1 Communication from the Commission to the European Parliament, the Council, the European economic and social committee and the Committee of the regions, Unleashing the potential of cloud computing in Europe, Brussels, 2012. available at http://ec.europa.eu/information_society/activities/cloudcomputing/docs/com/com_cloud.pdf, accessed on 3. April 2013, p. 2.

2 The Economist, “Battle of the clouds: Cloud computing”, 381 The Economist 13; 71, 17 October 2009. Available at <http://www.economist.com/node/14644393>

3 P. Mell, T. Grance, “The NIST Definition of Cloud Computing: Recommendations of the National Institute of Standards and Technology”, National Institute of Standards and Technology (NIST) Special Publication 800–145, January 2011, available at <http://csrc.nist.gov/publications/nistpubs/800–145/SP800–145.pdf>

4 J. Sluis, P. Larouche, W. Sauter, Cloud Computing in the EU Policy Sphere – Interoperability, Vertical integration and Internal Market, 2012. p. 14.

5 P. Mell, T. Grance, *opopt. cit.*

6 *Ibid.*

means change from selling software licenses to access- or subscription-based models, whereby customers will purchase services offered on the cloud computing platform on a discrete (pay-as-you-go/access) or continuous (subscription) basis.⁷ Finally, (5) cloud computing is a measured service. Cloud systems optimize and control resource use which can be monitored, controlled and reported providing transparency for both the provider and the consumer.

There are mainly three cloud service models. The most visible one is the Software as a Service (SaaS). It provides access to a service whereby installing any additional software is not required. The most popular of these services like YouTube and Google Maps execute their data-intensive operations in the cloud and then return results to the user. Platform as a Service (PaaS) is a model which allows users to access development platforms for software without the need to buy or install additional software or hardware. Developers can use the cloud's service and design to implement and run their products using their firm's own server power. Finally, the Infrastructure as a Service (IaaS) offers remote computing and storage. Users can store or backup data on the servers with unlimited capacity.

2. Competition Issues

Although some of the competition issues fall outside the scope of this paper, they should nevertheless be mentioned. These are primarily two issues: first, although users may purchase services on one service provider, it is not excluded that the service provider, let's say SaaS, uses services of another provider, for instance IaaS, and in that way the user has also engaged with the second service provider for which he may or may not know.⁸ Thus the second service provider may dictate terms of business for both the first provider and also their users. The second issue which will not be discussed in this paper is derived from the fact that all cloud services are only available through various Internet service providers (ISP) and telecommunication companies who dictate the cost and terms for accessing the Internet and subsequently cloud services.⁹ They can favor some cloud service providers while

disfavoring others. In order to determine the competition issues in cloud computing, we are going to analyze each service model separately.

When cloud computing takes the form of SaaS, "the service provides functionality akin to an end-user application".¹⁰ The harm to the competition comes from the practice of service providers resulting in data and application portability obstacles to enhance network effects.¹¹ Network effects are common in the ICT sector and mean that the more people use a product or a service, the more others will be willing to use them as well. A typical example is a telephone. This device would be of little use if there are only a few in the world, but the more people use telephones, the more people would buy them.¹² The examples in the cloud computing sector are Facebook and MySpace. The first one's usefulness derives from the size of its community of members, while the second one suffered a loss because of the small number of people using it.

When cloud services are offered in the form of a PaaS, providers offer tools for the construction of applications.¹³ These platforms offer an environment for building, upgrading and maintaining applications. The competition issues in these services arise from the lock-in effect. This effect is achieved through the inability to port an application developed on that platform and associated data to another provider's platform.¹⁴ Also the issue may arise from the abusive licensing conditions placed by the provider on developers of applications. This was the subject of recent investigations by the Commission in relation to Apple's iPhone applications. The investigation concerned Apple's decision of April 2010 to restrict the terms and conditions of its license agreement with independent developers of applications or 'apps' for its iPhone operating system. It focused on the rationale underlying Apple's requirement to use only Apple's native programming tools and approved languages when writing iPhone apps, to the detriment of third-party layers, which could have ultimately resulted in shutting out competition from devices running platforms other than Apple's.¹⁵ If considered dominant in

7 J. Sluis, P. Larouche, W. Sauter, op. cit., pg 14.

8 K. W. Hon, C. Millard and I. Walden, "The Problem of 'Personal Data' in Cloud Computing – What Information is Regulated? The Cloud of Unknowing Part 1", London, 2011. *International Data Privacy Law*, 1(4)/2011, 211–228, p. 217.

9 See generally J. Sluis, P. Larouche, W. Sauter opopt. cit. and Walden (ed.) *Telecommunications Law and Regulation*, 3rd ed., OUP, 2009.

10 K. W. Hon, C. Millard and I. Walden, opt. cit., E.g. Facebook, MySpace, Google Docs and Office Web Apps.

11 L. D. C. Luciano, I. Walden, *Ensuring competition in the Clouds: Role of competition law?* (April 7, 2011). Available at <http://ssrn.com/abstract=1840547> or <http://dx.doi.org/10.2139/ssrn.1840547>, p. 4.

12 Ibid.

13 E.g. Google App Engine, Force.com, LongJump.

14 L. D. C. Luciano, I. Walden, op. cit.

15 "EUROPA – Press Releases – Antitrust: Statement on Apple's iPhone policy changes," September 25, 2010. Available at http://europa.eu/rapid/press-release_IP-10-1006_en.htm

the market, Apple's conduct could be considered abusive as it reduces the choice of consumers.

Finally, when the cloud service takes a form of an IaaS, we are talking about the provision of virtualized application hosting or data storage. The main competition concern arises from the lack of data and application portability due to inability or prohibition by the service provider.¹⁶

3. Legal Regulation in the EU

The EU competition regime comprises different elements designed to address a range of anticompetitive behaviors, including conduct between market participants or carried out against consumers. We will concentrate here on Articles 101, 102 and 107 of the TFEU¹⁷ and later there will be a word about some other, presumably more effective, mechanisms of ensuring competition.

3.1. Article 101

Article 101 of the TFEU prohibits "all agreements between undertakings, decisions by associations of undertakings and concerted practices which may affect trade between Member States and which have as their object or effect the prevention, restriction or distortion of competition within the internal market". Such agreements and practices can be horizontal¹⁸ or vertical¹⁹ and may be exempted pursuant to Article 101(3) if they "contribute to improving the production or distribution of goods or to promoting technical or economic progress, while allowing consumer a fair share of the resulting benefit and which does not: impose on undertakings concerned restrictions which are not indispensable to the attainment of these objectives; and afford such undertakings the possibility of eliminating competition in respect of a substantial part of the products in question". Cloud computing companies often engage in contracts which easily satisfy the first two conditions set out in Article 101(3). However, it is more difficult to prove the compliance with the third condition of the mentioned article.

It is important to note that even though a cloud company can achieve certain dominance in the market for a certain period of time as a result of agreements or concerted practice, cloud

computing is a very fast-changing sector so the position of one firm in the market may quickly be changed by the innovations developed by other firms. Therefore agreements and practices in an innovation sector that would be prohibited in accordance with Article 101(1) are more likely to be exempted pursuant to Article 101(3).²⁰ For that reason the Commission does not tend to be overly intrusive in the ICT sector in the EU.

The commission may intervene in issues relating to standard-setting agreements and the ownership of intellectual property rights within adopted standards. In the Guidelines on the applicability of Article 101²¹ it is stated that standard-setting agreements would not normally restrict competition within the meaning of Article 101(1) if the participation is unrestricted, if procedure for adopting standard is transparent, if the standardization agreement do not contain obligation to comply and if it provides access to the standard on fair, reasonable and non-discriminatory terms.²² Nevertheless, even a closed standard-setting procedure may be permissible under certain circumstances, mainly because it was considered that the opening process to all interested parties could create logical and practical difficulties.²³

Although standardization could be seen as something positive, as recognized by the EU²⁴, it is also recognized that, when a technology has been adopted as a standard, it may result in the creation of a barrier to entry, as other technologies and undertakings may be excluded from the market.²⁵

3.2. Article 102

Article 102 prohibits the abuse of dominant position in the internal market or in a substantial part thereof. This article is an important tool for the Commission in the cloud computing sector. Dominance can be abused when products

20 L. D. C. Luciano, I. Walden, op. cit.

21 European Commission, "Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements (Text with EEA relevance)" (2011/C 11/01), available at <<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2011:011:0001:0072:EN:PDF>

22 Ibid., p. 59.

23 See Commission Decision of 15 December 1986 relating to a proceeding under Article 85 of the EEC Treaty (IV/31.458 – X/Open Group) (OJ L 035/36, 6.2.1987).

24 European Commission, (Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements (Text with EEA relevance)) p. 56.

25 Ibid.

16 L. D. C. Luciano, I. Walden, op. cit.

17 Consolidated Version of the Treaty on the Functioning of the European Union, OJ C 83/47, 30.3.2010.

18 A practice is horizontal when it takes place at the same level of supply/distribution chain.

19 A practice is vertical when it takes place at a different level of supply/distribution chain.

offered by undertakings in this sector become *de facto* standards protected by intellectual property rights (IPR), or undertakings may own IPR which are a part of the standard adopted by standardization bodies or that have been given preference by the public administration in relation to public procurements.

Once a standard has been adopted, the holder of IPR which are essential for the implementation of the standard can deny access to the competitors by either refusing to grant a license or requiring unreasonable terms and conditions for licensing. If the undertaking is dominant then the Commission may impose compulsory licensing of IPR on reasonable terms to avoid anticompetitive effects.²⁶ But, if the undertaking is not dominant, then there is not much the Commission can do about the refusal. In addition the undertaking can hold IPR over *de facto* standards. *De facto* standard is the one created by the market rather than by a standardization body. There is no law or standard associated with it and yet it is followed as though such enforcement existed.²⁷ Nevertheless, the situation with these standards is the same: if the undertaking is dominant then the Commission will intervene, but if it's not, there is not much the Commission can do.

Usually the market share required under EU law for an undertaking to be considered dominant, if all other market conditions point at that same direction, is at least 40%.²⁸ In the cloud computing sector, where network effects are likely to be strong in the same way as in the ICT sector as a whole, the non-applicability of competition law before the attainment of dominance could prejudice the goals of competition law.²⁹ By the time the competition law mechanisms are set into motion, the competition might already have been distorted and network effects can make it difficult to restore the competition. This was recognized by the Competition Commissioner who stated that "a case by case ex-post intervention is not always efficient to deal with structural problems, [thus] competition and sector regulation will need to work hand in hand, pursuing the same objectives through complementary means".³⁰

26 E.g. Cases C-241/91 P and C-242/91 P RTE and ITP v Commission [1995] ECR I-743 ('Magill' ('Magill')) and Case C-418/01 IMS GmbH v NDC Health GmbH & Co KG [2004] ECR I-5039.

27 See Case T-201/04 Microsoft Corp v Commission [2007] II ECR 03601.

28 See Guidance on the Commission's Enforcement Priorities in Applying Article 82 EC Treaty to Abusive Exclusionary Conduct by Dominant Undertakings (OJ C 45/7, 24.2.2009), para. 14.

29 L. D. C. Luciano, I. Walden, *opopt. cit.*

30 EUROPA – Press Releases – "Competition policy for an open and fair digital economy Second NEREC Research

Since EU competition law had not known of mechanisms for intervention before dominance occurred, the manner in which the relevant market is defined assumes a great significance. A number of special characteristics of cloud computing and the manner the competition authority understands them may have an impact on how "wide" or "narrow" the relevant market is defined and thus where the dominance is deemed to exist. The main issue which arises in cloud computing is the use of the tie-in or exclusivity agreements to leverage the market power of a dominant provider in the aftermarket.³¹ While providers may have strong competition in the primary market, after they have had locked-in customers, they have virtually no competition in the aftermarket. On a pretext such as the need to ensure the safety or effectiveness of the service, the provider can impose the acquisition of the provider's own software.

Tying is not related only to software. Lock-in effect can be exploited at different levels. In 2010, for example, the Commission launched an investigation regarding IBM's computer mainframes.³² IBM is being investigated for two practices in this sector: tying its mainframe hardware to its mainframe operating system and its discriminatory behavior towards the competing suppliers of mainframe maintenance services.³³ IBM appears to be using its dominance in the mainframe operating system market to leverage its position in the hardware market.³⁴

This put aside, the Commission may intervene under Article 102 only when the cloud service provider is proven to be dominant in the market. Other ways for ensuring competition, like limitation of interoperability fall outside the scope of jurisdiction of the competition authorities. Nevertheless, competition law is not the only form of regulation of practices that could harm the competition and consumers.

3.3. Article 107

Article 107 prohibits a Member State from granting any form of "aid" that distorts competition by favoring certain undertakings. As such, this

Conference on Electronic Communications Madrid," 29 October 2010. Available at http://europa.eu/rapid/press-release_SPEECH-10-610_en.htm

31 L. D. C. Luciano, I. Walden, *op. cit.*; An aftermarket refers to a market where consumers are likely to buy a product or a service related to the one sold in the primary market.

32 "EUROPA – Press Releases – Antitrust: Commission initiates formal investigations against IBM in two cases of suspected abuse of dominant market position," 26 July 2010. Available at http://europa.eu/rapid/press-release_IP-10-1006_en.htm

33 *Ibid.*

34 *Ibid.*

prohibition may be relevant to cloud computing when a distortion of competition is caused by public administrations via public procurement decisions. Competitors excluded from the market may be able to complain and seek redress when, for instance, a public administration chooses specific public procurement specifications which may lead to elimination of a substantial part of competition.³⁵

An example of this situation can be found in the US case of *Google v United States Interior Department*.³⁶ In October 2010 Google filed a claim against the U.S. Interior Department alleging that its public procurement practices illegally distorted competition by requiring, in relation to a US\$59 million contract for ICT services, messaging technologies to be based on Microsoft Business Productivity Online Suite, therefore excluding Google from public procurements and restricting competition.

It is not difficult to imagine similar claims being brought in the EU, especially considering the interoperability strategy of public administrations in the EU, discussed further below. Therefore, Article 107(1) could prove to be a useful tool for competitors excluded due to public procurement criteria.

4. Other Mechanisms for Protection of Competition

So far, we have examined the potential application of EU competition law to cloud computing. One thing that could be objected to these mechanisms is that they only act as an *ex post*, reactive regime. Therefore, the ability to effectively prevent anticompetitive behavior is questionable. This part of the paper will deal with other mechanisms of protection of competition which deal with the issues before the TFEU is applied.

4.1. Open standards

One of the things that can ensure competition is standardization. Although standardization in the EU has proven as a successful tool for the achievement of the Single Market, the Commission has admitted the need for improvements in certain areas, including ICT.³⁷ The biggest problems of the standardization procedure of the EU are its speed and effectiveness. The rapid changes in the ICT

sector are often not followed by an appropriate standardization.³⁸ What the EU can do is to follow the example of the US. In the US there is no hierarchical structure similar to the one found in the EU where national standardization bodies must drop the development of a national standard if an European Standardization Organization is already working on a standard for the same matter.³⁹ That means that standards in the US can be adopted more quickly than in the EU. Furthermore, we must recognize the important role of the informal standardization groups. The White Paper⁴⁰ proposes that reference to standards created by fora and consortia⁴¹ in EU legislation and policies should be permissible, as a means of achieving public policy goals. However, in order for informal standards to be referenced in EU legislation they must comply with the attributes of formal standards: openness, consensus, balance and transparency. According to Commissioner Neelie Kroes, "The reform of the European ICT standardization framework is a simple way to bring relevant standards from the non-traditional standard-setting organizations to an equal footing with European standards when it comes to achieving interoperability".⁴²

4.2. Interoperability

The interoperability issue in the ICT sector is of great importance. Its relevance has also been highlighted by the recent commitments in the *Intel/McAfee*⁴³ decision, where the Commission approved the acquisition of McAfee by Intel subject to certain interoperability commitments. The acquisition had raised concerns in respect of the possibility that, after the acquisition, security software would suffer from technical tying between McAfee's security solutions and Intel CPUs and chipsets or from a lack of interoperability with the latter.⁴⁴ The commitments accepted by the Commission contained, among other things, an obligation by Intel to ensure that instruction,

35 L. D. C. Luciano, I. Walden, *opopt. cit.*

36 See *Google Inc. and Onix Networking Corporation v. The United States and Softchoice Corporation* (United States Court of Federal Claims 2011).

37 European Commission, "Communication from the Commission to the European Parliament and the Council on the Role of European Standardization in the framework of European Policies and Legislation," 2004, p. 3.

38 L. D. C. Luciano, I. Walden, *op. cit.*

39 Directive 98/34/EC (OJ L 204/37, 21.7.1998), para. 18.

40 European Commission, "White Paper: Modernising ICT Standardisation in the EU – The Way Forward," July 3, 2009.

41 Fora and consortia are composed by undertakings which draft technical standards and specifications outside the framework of the recognised standardisation bodies.

42 "EUROPA – Press Releases – Neelie Kroes Address at Open Forum Europe 2010 Summit: 'Openness at the heart of the EU Digital Agenda' Brussels," 10 June 2010. Available at http://europa.eu/rapid/press-release_SPEECH-10-300_en.htm

43 European Commission, "Case n° COMP M.5984 – Intel/McAfee – Commitments to the Commission," 20 January 2011.

44 L. D. C. Luciano, I. Walden, *op. cit.*

interoperability and optimization information are documented and available, under request, to third party vendors of Endpoint Security Software pursuant to a license or other suitable contractual agreement.⁴⁵ Another important element of the commitments regarded the obligation by Intel not to actively engineer or design its microprocessors or chips to degrade the performance of Endpoint Security Software sold by a firm other than Intel.⁴⁶ This decision is a relevant precedent for cloud computing and for the ICT sector in general, where a purposeful creation of obstacles for interoperability can be used as a strategy to create barriers to entry and exclude competitors from the market.⁴⁷

4.3. Data portability

Another emerging issue on the competition in cloud computing is data portability. As explained earlier in this paper, migration from one cloud service to another may be restricted pursuant to the terms of an agreement with a provider or it may be difficult due to the technical incompatibility. This is the so-called lock-in effect. An improvement in data portability would reduce the lock-in effect and require competitors to compete for their existing customers as well as increasing their customer base. It is proposed also that data portability becomes a right protected within the privacy context.⁴⁸ According to the Commission, an individual should have the right to withdraw his own data from an application or service and transfer such data into another application or service, as far as this is technically feasible.⁴⁹ Thus, regulating data portability in the cloud computing sector could prove to be more effective and straightforward via the enforcement of data portability rights under the umbrella of data protection policy than via the enforcement of competition law.⁵⁰

5. Conclusion

This paper has analyzed competition problems in cloud computing, their regulation within EU competition law, and possible solutions outside of the mentioned legal framework.

Although EU competition law gives power to the Commission to intervene when there is some kind of anti-competitive behavior, it can only act when the firm has a dominant position in the market. Given the fact that the ICT sector is fast-developing and fast-changing, it is hard to achieve a dominant position in the Primary Market, but because of the lock-in effect, a firm can have almost complete monopoly in the aftermarket. For that reason, it is necessary to take additional measures such as adequate defining of the cloud market, informal standardizations, achieving interoperability and data portability.

This paper has dealt with these solutions presenting both the issues on which they can be implemented and the conditions for their implementation.

Saša Markota

“Cloud computing” iz ugla evropskog prava konkurencije

„Klaud kompjuting” je relativno nov fenomen koji se bazira na ideji da se podaci i aplikacije nalaze na udaljenoj mašini kojoj se pristupa preko interneta sa bilo kog mesta na planeti. Ovaj članak predstavlja uvod u probleme konkurencije u sferi klaud kompjutinga unutar zakonske regulative EU. Radije smo se fokusirali na nedostatke i pravne praznine prava konkurencije EU, kao i na to kako rešiti praktične ozbiljne probleme onda kada Evropska komisija nije u mogućnosti da reaguje u skladu sa trenutnom pravnom regulativom nego da se fokusiramo na pozitivne strane. Problemi kao što su otvoreni standardi, interoperabilnost i prenosivost podataka bi trebalo detaljnije da se analiziraju s obzirom na to da predstavljaju efikasne načine zaštite konkurencije u sferi klaud kompjutinga. U radu se nastoji dati pregled problema koji utiču na konkurenciju u sektoru koji se svakodnevno menja i razvija.

Ključne reči: *Klaud kompjuting, konkurencija, interoperabilnost, prenosivost podataka*

45 Ibid.

46 European Commission, “Case n° COMP M.5984 – Intel/McAfee – Commitments to the Commission,” 20 January 2011.

47 L. D. C. Luciano, I. Walden, op. cit.

48 European Commission, (Communication from the Commission to the European Parliament and the Council on the Role of European Standardization in the framework of European Policies and Legislation), 2004, p. 3.

49 Ibid.

50 L. D. C. Luciano, I. Walden, opopt. cit.