

A Copyright Issue Exploration In The Context Of Cloud Computing

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Abstract—The popularization of cloud computing made it much more convenient for the public to access information resources through the cyberspace. While becoming convenient for the public, this also brought up copyright issues, especially reproduction rights, as a significant challenge. Using China as an example, I explore this challenge and suggest that China to include the temporary copy into the concept of reproduction, while for those temporary copies that are spontaneous and only with the purpose of transmission or reasonable use, they can be exempted from liability since they are not condemnable. A spontaneous copy might not constitute an infringement since the user even doesn't have any cognition of the copying act he or she has committed. In other cases, copying acts for private use between specific users within the cloud space may be permitted unless it is intended for commercial use. I conclude the legislative proposals as results of dynamic balance between different interests and values, especially between the protection of copyright and the culture diversity.

Keywords—cloud computing, information source copy, copyright, legal issue

INTRODUCTION

The world's largest market research report and technical development center, the IDG, forecasted that within the next year, cloud computing will increase 38%. Cloud technology will keep a good momentum of development in the years to come. This rapid increasing will bring many complex issues, one of which is how to regulate copyright within the cloud computing environment. This paper focuses on discussing the copyright issues of copying information in the cloud environment.

1 THE RISE OF CLOUD COMPUTING AND ITS IMPACT ON COPYRIGHT

1.1 THE CONCEPT OF CLOUD COMPUTING

Cloud computing was adopted to provide service in 2006 by Amazon. The past decade witnessed a rapid development of the new technology in our daily lives. Due to the rapid evolution of cloud computing, many

definitions exist. The most popular definition is given by the US National Institute of Standards and Technology (NIST) as "a computing resource sharing mode that allows the resources to be deployed quickly and requires only a little management work". "This cloud model promotes availability and is composed of five essential characteristics: On-demand self-service, Broad network access, Resource pooling, Rapid elasticity, Measured Service"^[1].

1.2 THE MODES OF CLOUD COMPUTING SERVICE

The three cloud computing service modes defined by NIST include Infrastructure-as-a-Service, Software-as-a-Service and Platform-as-a-Service respectively. Among the three of IaaS, PaaS, and SaaS, SaaS has critical relevance to the potential copyright issues for cloud end users.

"Software as a Service (SaaS). The capability provided to the consumer is to use the provider's applications running on a cloud infrastructure. The applications are accessible from various client devices through either a thin client interface, such as a web browser (e.g., web-based email), or a program interface. The consumer does not manage or control the underlying cloud infrastructure with the possible exception of limited user-specific application configuration settings."^[2]

1.3 COPYRIGHT CHALLENGE IN THE CONTEXT OF CLOUD COMPUTING

Cloud computing has provided a platform for a wide range of users. Its convenience, safety, high data sharing and access to computing resources surpasses any other computing method.

While cloud computing brought much convenience, many difficult questions have been brought up, including copyright wherein it involves the issue of temporary copying. With the development of network, there came an issue of temporary copying, which will stand out in the context of cloud computing technology. Furthermore, since "cloud" is a relatively open platform, users may copy others' works that are stored in the cloud space to his or her own cloud space. Since this copying only occurs between certain users other than being disseminated to the public, it will be a challenge for us to determine the nature of it and how to regulate it. Not all the copies occurring in cloud computing are aware to users. Then, for the spontaneous technical behavior, it remains to be explored whether the subject of a copying act has constituted any infringement.

2. AN EXPLORATION INTO THREE ISSUES RELATING TO COPYRIGHTS IN CLOUD COMPUTING.

2.1 TEMPORARY COPYING

2.1.1 CABLEVISION CASE: US INCLUDES TEMPORARY COPYING INTO THE CATEGORY OF REPRODUCTION RIGHTS

The Cablevision case is a typical case on temporary copying and a brief summary of this case is as follows: In March 2006, Cablevision Company in the US declared that they had developed a new service called RS-DVR (remote storage digital video recorder). Unlike the traditional storing recorded content into a hard disk, RS-DVR will store the recorded content into the cloud storage server. Its working principle is to convert TV signal into digital information stream and transmit the recorded information into the buffer first and then the cloud storage server. A user may send an instruction to record and then view the recorded content at a later time. Many companies in the US had shown dissatisfaction with such service and they sued the Cablevision holding that such company had infringed their reproduction rights. The Trial Court affirmed that the Cablevision Company had indeed infringed their reproduction rights, while the Second Circuit Court of Appeals reversed this judgment in 2008 as they argued that in accordance with the provisions of US Copyright Law, the act of copying should satisfy two essential conditions, namely the 'visible carrier' and "fixed period". The Trial Court had ignored the consideration of such essential condition as the "fixed period", instead, they held that the works of the plaintiff had been overwritten after being existed in the defendant's server for only a second, which had not reached the time frame set for "fixed period". It is concluded from the copyright law of the United States which stipulates that "a work must be sufficiently permanent or stable to permit it to be perceived, reproduced, or otherwise communicated for a period of more than transitory duration".

As we can clearly see from the cablevision case that the US includes the temporary copying into the category of reproduction rights. Therefore, when judging whether the act of Cablevision has constituted a copying behavior, what have been directly used is the criteria for infringement.

2.1.2 THE GENERATION OF TEMPORARY COPYING AND ITS MEANING

Before the emergence of cloud computing, the precondition of using a network resource is to first fix it onto a visible carrier. However, the emergence of cloud computing has changed the situation. Cloud gradually undertakes the computation and storage functions that are originally the works of a local computer. Take SaaS as an example, instead of downloading software packages to our local machine, we can directly use them online. But in the process of running a computer program, a computer may automatically transfer the software into the local memory, where it exists in the form of a temporary copy, which may no longer exist whenever any information replacement occurs, for example, when the computer shuts off, restarts, executes a new software package, etc.

"In contrast with a traditional fixed and visible copy of a work, such dynamic memory occurring in the internal storage is referred to as temporary copying for its transience and temporality"^[3]. In cloud computing, temporary copying is a situation that occurs quite often. For instance, when listening to music online, music files will be formed into a temporary copy in the memory of a computer, whenever we shut off the music, such duplication disappears immediately. Hence it is called a "temporary" copy.

2.1.3 DETERMINATION OF THE NATURE OF TEMPORARY COPYING ACTS

For nature of temporary copying, different countries or regions may have different policies. The EU and the US have included the temporary copying into the category of reproduction as stipulated in the Copyright Law. The EU's Directive on Copyright in the Information Society has stipulated that the copying acts shall include direct or indirect, temporary or permanent reproduction by any means and in any form, in whole or in part. It also sets forth the "exceptions and limitations" clause that stipulates if it is transient or incidental [and] an integral and essential part of a technological process and whose sole purpose is to enable: (a) a transmission in a network between third parties by an intermediary, or (b) a lawful use of a work or other subject-matter to be made, and which have no independent economic significance, shall be exempted from the reproduction rights provided for in Article 2. In the US Copyright Law, there are two essential conditions that are considered necessary to constitute duplication, whereas in this case, the time a temporary copy remains attached to the memory is only 1.2 seconds, which apparently does not conform to the criteria of "fixed period", hence it does not belong to a reproduction. Although both have included the temporary copying acts into their legislation, still there are differences between them. What has been adopted by the US is a complete inclusion of temporary copying into the traditional copyrights, while the EU has also set forth an exception clause containing restrictions and limitations in addition to its acknowledgement that the temporary copying belongs to a reproduction in principle.

So far, China has not made any explicit provision on the prohibition of temporary copying, while most of the developing countries also have not included the temporary copying into the category of reproduction. This is mainly because the developing countries tend to be the importing countries of copyright works.

2.2 "COPYING" ACTS IN THE CLOUD SPACE

The "copying" acts between users of the cloud space are not only limited to those inside the cloud space, but also include the copying of resources within the cloud space to any other visible carrier or copying of resources on any other visible carrier to the cloud space.

Copying of resources within a cloud space to any other visible carrier or copying of resources on any other visible carrier to a cloud space, both of which will form a new duplicate on the visible carrier, thus constitute a reproduction in the sense of copyright law.

As a result, they can all be regulated by applying the copyrights. Therefore, here we focus on the discussion of copying acts between users within a cloud space.

2.2.1 THE NATURE OF THE COPYING ACTS BETWEEN USERS WITHIN THE CLOUD SPACE

Users of the cloud space may copy the works stored in other's cloud space to his or her own space. Such "copying" act is not a reproduction in the sense of current copyright law. A reproduction in the sense of copyright law must involve the element of a new duplicate. According to the introduction about cloud computing technology above, we know that cloud computing is a network computing, which is a virtualized technology. "In other words, regardless of how many users the work has been duplicated to, the works displayed on the cloud spaces of different users share only one carrier. That is to say, the work's duplicate is uploaded by the first user and is stored on the cloud server, where users are able to use the said "duplicate" at the same time"^[4]. Therefore, such copying act has not lead to the formation of a new duplicate from the physical perspective, though it may appear that there is also another user who has made a copy of the duplication in terms of the perception we have.

Such "copy" can also be divided into two types based on whether or not they are disseminated to the public. One type is that such copy is only limited to a certain part of users without disseminating it to the public, while the other type is to disseminate it to the public through duplication.

2.2.2 REGULATION ROUTE AND DILEMMA FOR THE "COPYING" ACTS BETWEEN USERS WITHIN THE CLOUD SPACE

Since it does not produce any new duplicate and is not a copying act in the sense of copyright law, it is hard for us to regulate the "copy" act between users within the cloud space from the perspective of copyrights. In the copyright law, the only thing that may relate to it is network dissemination. According to the Regulation on the Protection of the Right to Network Dissemination of Information, the so called right to network dissemination of information refers to the provision of works, performance or audio and video recording through cable or wireless means so that the public can obtain the works, performances or audio and video recordings at a personally selected time and location. Thus, it can be seen that the characteristics of the right to network dissemination of information is as follows: Firstly, it is the provision of works, performances or audio and video recordings through cable or wireless means. Secondly, the public can play those provided at a personally selected time and location. Apparently, one of the essential elements of the provision is "the public". Therefore, the second case refers to the public dissemination of the information copied from the cloud space, which apparently constitutes an infringement on the right to network dissemination of information. The first case does not fall into the conditions that are prescribed by this clause. Therefore, it worths discussion on whether or not and how to formulate any regulation on the first case.

2.2.3 REGULATION ON COPYING ACTS BETWEEN SPECIFIC USERS WITHIN THE CLOUD SPACE

This involves the balance of interests between the spread of works and the protection of copyrights. For copying acts between specific users of a cloud space, we shall neither ignore it nor impose too much restriction. In this sense, we need to find a proper balance. The soul of copyright is works, so spreading is both the cause of the production of works and the way through which the works are generating their values. In the Internet era, cloud space has provided a good platform for the spread of works, thus it is certainly not desirable if we go extreme and restrict all kinds of copying acts between users within the cloud space regardless of which means they are using by. But we also need to take into account the protection of owners' copyrights, therefore, under such circumstance, we may choose to set a certain limit for the lawful copying acts between users within the cloud space.

In this regard, the UK has proposed a draft amendment to the copyright law in 2014 that the end user is allowed to store a work that is subject to the protection of copyright law to a cloud for the purpose of private and non-commercial use.

Despite the UK has acknowledged the legitimacy of such copying acts in its draft amendment, it also imposes basic restrictions on it that the cloud user can not use a work for commercial purpose. In addition, a copyright owner may also take necessary measures to limit the number of duplicated works and the scope of the works to be duplicated.

2.3 PURPOSEFUL COPY AND SPONTANEOUS COPY

2.3.1 THE CONCEPTS OF BOTH PURPOSEFUL COPY AND SPONTANEOUS COPY

In cloud computing, the fuzzy region for the definition of such concept as copy has included not only the temporary copying, but also spontaneous copy. According to the traditional understanding, the precondition of a copying act is based on the subjective cognition and purposefulness of an actor, who shall know clearly about his or her copying act and has the purpose of obtaining a duplicate. For example, a user downloads what he or she sees on the Internet onto his or her computer hard disk so as to watch it at a later time or to use it in other ways. However, with the development of computer technology and increasingly rich Internet functions, the subjective cognition and purposefulness that we have on copy has become blurred to some extent that even we can not identify the "copying" act we are doing, e.g. when a user runs an online music player to play a song, a temporary copy will be formed inside the user's computer memory. However, such user has neither the subjective cognition nor the purposefulness on the formation of such duplication. For this kind of copy, we may refer to it as "spontaneous copy". "The so called 'spontaneous copy' refers to an indispensable reproduction in order to have reasonable access to the work"^[5]. Technically speaking, such copy is a spontaneous product. Whereas the purposeful copy relative to it is defined as "a reproductive act, during which subjectively, the user has

clear psychological cognition and expected effect to the work reproducing act and the purpose of such copy is to produce an alternative duplicate"^[6].

2.3.2 TAKE CABLEVISION CASE AS AN EXAMPLE TO DISTINGUISH THE PURPOSEFUL COPY AND SPONTANEOUS COPY

The details of Cablevision case has been mentioned previously: A company was providing a new kind of service and had designed a set of system for it. This system can follow a user's instruction to record a TV program and save it for the user to use at a later time. In the Cablevision case, the US Second Circuit Court of Appeals held that the temporary copying act concerned in this case is an autonomic behavior performed by such user.

The confirmation of whether the temporary copying act is an autonomic behavior performed by such user determines whether the act of such user has constituted a copyright infringement. The system being researched and maintained by cloud service provider is only a platform, which the users just rely on for copying, except that the copying process is automatically completed by the system. As a matter of fact, throughout the process, the system provided by cloud service equals a tool, which is similar to the following example: If person A goes to a copy shop to make a copy of a document and he operates the copy machine in the shop by himself. Apparently, the subject of this duplicating act is A other than a spontaneous act performed by the machine. In the Cablevision case, the users chose to record and sent an operational instruction themselves, while the specific recording process was completed by the system on their behalf. In the end, the users used the duplicates obtained. Conducting a copying act is an independent choice made by the user who has clear cognition and purposefulness, thus it does not belong to spontaneous copy but a purposeful one. Consequently, it can be concluded that there are two key points that can be used to distinguish a purposeful copy and a spontaneous one: whether the actor has clear cognition and whether the actor is intended to get the alternative duplicate. If the answers to both questions are positive, then it can be determined as a purposeful copy, otherwise, it is a spontaneous one.

2.3.3 WHETHER A SPONTANEOUS COPY CONSTITUTES AN INFRINGEMENT

China's Tort Liability Law mainly adopts the fault liability system, which requires that the actor has certain fault. Whereas in the case of spontaneous copy, the user even does not have any cognition of the copying act he or she has committed, let alone the fault of the act. If the "actor" of spontaneous copy has also to be held responsible, then it equals that the law is punishing an innocent person, and such a wide coverage has seriously infringed the private area. Apparently, "it is an extreme contempt of one's dignity if everyone has to be punished by the law for an act and its consequent damages that can not be determined by his or her free will"^[7]. Therefore, the users of spontaneous copying have not constituted any infringement, either from the

perspective of law or from the perspective of value protection.

3 LEGISLATIVE PROPOSALS FOR REPRODUCTION RIGHTS IN CHINA

3.1 INCLUSION AND LIMITATION OF AND RESTRICTION ON TEMPORARY COPY

There is also much debate worldwide on issues relating to the definition of the nature of temporary copy, wherein the "negative theory" claims that the temporary copy shall not constitute a reproduction as it is essentially different from the traditional concept of reproduction, which is the viewpoint maintained by many developing countries. However, the "positive theory" claims the opposite.

So far, China maintains a negative attitude towards the inclusion of temporary copy into copyrights, for which there are two reasons. In terms of its citizens' actual demand, China is an importing country of copyright works. It will greatly hinder domestic users' reading or browsing valuable works through Internet. In terms of the principle for the protection of copyright, if a temporary copy act constitutes a reproduction, it may lead to the extension of copyright to a new right of digital access. Because "on the Internet, if we put the temporary copy under the control of copyright owner, then every time of transmission, consequent downloading and screen displaying of the subject-matter to be protected shall constitute a reproduction, the result of which is the extension of copyright to a new right of digital access. However, this kind of right to 'use' is in contradiction with the consistent principle adopted for copyright protection, because copyright protection does not limit the consuming behavior or information reception"^[8].

China is a developing country and also an importing country of copyright works, while the developed countries with much more advanced culture industry tend to be the exporting country of copyright works. However, it may overlook the development of China's local culture industry and the necessity of copyright protection if we exclude temporary copy from the category of reproduction out of the concern that in view of current situation, the inclusion may hinder domestic user's browsing of foreign works. The avoidance of temporary copy has caused the separation between the law of China and the development of network technology, which is "not only in favor of the protection of copyright owner, but also impacts the websites' understanding of rights and infringement, bringing great negative impact on the development of copyright-related industries in the network environment"^[9].

Concerning the issue that the inclusion of temporary copy may give rise to the extension of copyright to a new right to digital access, it may be solved by adding the "exception and limitation" clauses. The country may include the temporary copy into the concept of reproduction, while for those temporary copies that are spontaneous and only with the purpose of transmission or reasonable use, they can be exempted from liability since they are not condemnable. In this way, it solves the issue as to avoid imposing legal regulations on any uncontrollable field.

3.2 REGULATION OF "COPYING" ACTS BETWEEN USERS WITHIN THE CLOUD SPACE

Copying acts between specific users within the cloud space are not reproduction in a real sense, but only acts that appear similar to reproduction, which if forbidden, is not conducive to culture dissemination. However, the complete permission of this may also cause damage to the rights of copyrights owners. Therefore the legislation needs to seek a dynamic balance between the protection of copyright and culture dissemination. In view of this, China may draw on the thought reflected in the draft amendment of the UK to allow the copying acts between users within the cloud space in principle which are intended for private use, but forbid the commercial use of such copying acts.

First of all, private use is defined as the use of a published work of others for the user's own private study, research or self entertainment. Such definition mainly originates from Clause 1 of Article 22 of China's Copyright Law, In the following cases, a work may be used without permission from, and without payment of remuneration to, the copyright owner, provided that the name of the author and the title of the work shall be indicated and the other rights enjoyed by the copyright owner by virtue of this Law shall not be prejudiced: (i) the use of a published work of others for the user's own private study, research or self entertainment. Such act of private use normally does not bring any damage to legal interest, and it will not bring any actual damage to the copyright-related personal rights or property right of the copyright owner. Furthermore, there is no law that prevents an individual's reasonable access to a work, wherein "reasonable" means that an individual accesses a work with a lawful purpose and uses it lawfully. Such freedom is a specific reflection of the protection on human rights. Article 33 of China's Constitution stipulates that the country respects and protects human rights. In Clause 1 of Article 27 of Universal Declaration of Human Rights, it stipulates that everyone has the right freely to participate in the cultural life of the community, to enjoy the arts and to share in scientific advancement and its benefits. Such a reasonable assignment of copyrights by copyright owners is out of the necessity for the whole society to learn and use scientific knowledge. Since the development of cloud computing has provided an even more convenient way for the public to gain access to a work, then for the welfare brought by such scientific development, the public shall be given the right to share it fairly with copyright owners.

However, once such act of "private use" has the commercial nature (the profitability), it will contravene the tenet of legislation. Allowing private use is based on the standpoint that we shall guarantee that the public has reasonable access to a work so that it may help citizens to acquire more useful information, thus to facilitate their study and research. This public-good purpose, once shattered by commercial use, will result in damages to the market interests of copyright owners and deprivation of the fruits of their labor. Locke has mentioned in the Second Treatise of Government that not only everyone has the right to protect his or her own property from being damaged, but also has the obligation to restrain himself or herself and not to hurt

other people. Of course, copyright owners are in exclusive possession of any and all lawful economic interests brought by their works. Showing respect to the fruits of other people is an attitude that should be maintained by everyone to works of other people.

CONCLUSION

With respect to the 3 Issues relating to reproduction rights in the context of a cloud space, this paper has explored them and provided my legislative proposals. China should include temporary copy into copyrights by the way of adding "exceptions and limitations" clause. The "copying" acts between users within the cloud space for private use should be forbidden only in the case of commercial intent. Both the inclusion of temporary copy and the regulation of "copying" acts between specific users of a cloud space are in fact seeking a possible way by balancing various interests and values.

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