ADVANTAGES AND DISADVANTAGES OF CLOUD COMPUTING SERVICES, FROM THE EMPLOYEE’S POINT OF VIEW

IACOB – EMANUEL BACIU
Ph.D. scholarship - "Acad. Andrei Radulescu" Legal Research Institute
Calea 13 Septembrie nr.13, corp B, et. 4, Bucharest, sector 5
PhD student – The "Alexandru Ioan Cuza" Police Academy
Dimitrie Bolintineanu street, no. 3
ROMÂNIA
baciu_iacob@yahoo.com

Abstract:
Cloud computing is a relatively new field, and this is likely the reason why it is still poorly understood by potential users in Romania, while also being an incompletely regulated field from a legal standpoint, as we see ourselves bound to enforce regulations that were issued in different circumstances, and which are thus showing their shortcomings. Cloud services are already a reality, and even if they are one step ahead of the legislation, a thorough analysis can identify, in most cases, solutions that cover most of the risks related to the use of a system of this type.

Cloud computing is the long-awaited solution by large corporations - and not only by them - to simplify the network infrastructure required to conduct their activity and to reduce equipment and maintenance costs. Despite the widely known benefits of cloud computing, large-scale introduction of cloud computing services can generate a number of risks associated with data protection, particularly in what concerns the lack of control over personal data and insufficient information on how, where, and who is in charge of data processing. These risks should be carefully evaluated when a company intends to contract the services of a cloud computing service provider.

This study aims at analysing the advantages and disadvantages of a cloud computing system from the perspective of the employee, as the party who interacts directly with this system.

Keywords: cloud computing, employee, telecommute, advantages, disadvantages
1. Cloud-computing services

Simply put, cloud computing means providing processing power to electronic devices (PCs, tablets, smartphones) via a remote infrastructure. Cloud computing doesn't have an internationally accepted definition, but some institutions have attempted to define this phenomenon. For example, the National Institute of Standards and Technology of the United States (NIST) has defined cloud computing as “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.” [1]. In turn, the European Commission said that cloud computing can be understood as "storage, processing, and use of data located on remote computers and accessed via the Internet", representing a further industrialisation (standardisation, scaling-up, wide-spread availability) of the provision of computing power ("utility computing") in the same way as power plants industrialised the provision of electrical power” [2].

Cloud services fall into three broad categories [3]:

1. Infrastructure as a Service (IaaS) consists in the use of servers, storage, or networking infrastructure through an Internet connection. IaaS is the most technically complete iteration of cloud computing, providing the client with the technical infrastructure required to develop, run, and store applications or data in cloud environments. Examples include Amazon Web Services, Windows Server, cloud render farms, etc.;

2. Platform as a Service (PaaS) consists of the design, development, testing, implementation, and hosting of web applications (application development). A few examples are Google App Engine, Windows Azure, Facebook Developers;

3. Software as a Service (SaaS) uses a browser as a platform, from which it runs web-based applications and services. This is the most common iteration of cloud services aimed at the ordinary user, and there are multiple examples thereof: social networks (Facebook, Twitter, LinkedIn), blogging platforms (Blogger, WordPress), webmail services (Gmail, Yahoo, Outlook.com), Internet banking portals, online payment platforms (PayPal), HR services platform (Workday, Concur Expense, Concur Travel), productivity platforms (HiTask, BaseCamp), client management applications (Salesforce), virtual data rooms, software productivity suites such as Microsoft Office 365, Adobe Air, etc.

Sometimes the types above are layered, for example the Skydox application (SaaS) for document collaboration is developed on Engine Yard (PaaS), that uses Amazon Web Services (IaaS).

Depending on their operating mode, there are several categories of cloud environments:

1. Public cloud - this is a type of cloud that is made available for contracting to the general public, being owned and operated by a third party cloud provider. It should be noted that the fact that it is "public" does not mean that the information held is disseminated to the public, but rather that the type of cloud service is generally available to the public for contracting purposes. This type of cloud is the one that is generally referred to when talking about cloud computing.

2. Hybrid cloud - the data or applications are portable and allow the connection between the public and the private clouds. The hybrid cloud scenario can be a good solution for entities
with special requirements in certain areas, and as such it has to combine the advantages of the public cloud with those of the private one. For example, clients can use applications hosted in the public cloud, while the information is stored locally.

3. Private cloud - this is a type of cloud hosted for or by a single entity in a private network, which is in most cases operated internally, and within which only parties belonging to the entity may share resources. In fact, this mode of operation is not a proper cloud, and as such many of the aspects considered when it comes to cloud computing services do not apply to the private cloud scenario [4].

2. Advantages of cloud computing services, from the employee's point of view

Transitioning from an internally managed solution to cloud computing services, whereby companies outsource the IT infrastructure and services, using on-line software applications, without installing them on their computers, results, first of all, in a number of advantages within the company, and some of these will be found at employee level as well, as they are the parties who interact directly with the system.

The widespread use of cloud computing services has paved the way and created the "technical support" for the possibility, for the employees, to telecommute from home or from any other place without the need to be physically present at the company's headquarters, this being, from the employees' perspective, the main advantage of the implementation of cloud computing services.

Thus, through cloud computing, if the employee has a laptop connected to the Internet, they can work from anywhere, even if they are not in the office, but at home with their family. The location of their other team members is not an issue, as long as they coordinate their efforts to successfully complete the projects.

Although not a fit for everyone, or for all trades or professions, "telecommuting" from home (as referred to in the Labour Code) or from premises other than the office tends to become increasingly common in Romania, being perceived as a "benefit" granted to the employees.

From a legal perspective, the Labour Code provides, since 2003, for the possibility to telecommute. As such, a contract of employment that provides for the possibility to telecommute is a type of contract of employment whose clause regarding the work place provides that the employee conducts their activity and fulfils their position-specific duties at home. Under the Labour Code, telecommuters are those employees who fulfil, at their home, the tasks and duties mentioned in their job descriptions. The fact that the employee establishes his/her own work schedule is a particularity of this type of contract of employment. However, the employer is entitled to check the telecommuter's activity, and the contract of employment must expressly state the schedule and the actual method used to perform these checks. It should be noted that employees conducting their activity as telecommuters enjoy equal treatment with other employees of the employer.

Compared with the employees who work exclusively from the company's office, the employee who can perform their duties, as set out in the job description, outside the company's premises has several advantages, including: reduced travel time and travel costs, greater flexibility of working hours, optimal use of their time by combining work and family life, more
employment opportunities, especially for people with disabilities, increased mobility, and more material advantages. On the other hand, companies have benefits as well: increased productivity, significantly reduced expenditures, flexible organisation of work, etc.

Unlike the employee working exclusively at the organisation's headquarters, in the context of this type of activity conducted at home or somewhere else, away from the office, the employee has a more flexible use of their time and may organise their work according to their own rules, depending on their capacity to work.

One issue that arises, however, is that time may not be well managed in all cases, and there are stressful circumstances where the individual must work to complete the project on weekends or very late at night. However, there is a risk of the employee's private life taking prevalence over their work, so the telecommuter must be a person able to optimally balance private life and work, rather than destroying them both. In this regard, there were situations where family conflicts arose because this optimum balance was not struck, and the members of the team in question had to revert to classical office work.

Another disadvantage of telecommuting, apart from disturbances in activity and placing additional stress on the family, is the fact that the individual is virtually isolated, as the direct contact with their co-workers and with the office atmosphere disappears.

A major disadvantage for the organisation that allows employees to work from home or in the field is that direct control over the employee is weakened. This is precisely why the employer has the legal right to permanently check the activity of the telecommuter, but this is done only according to a schedule that is agreed by and between the two parties.

We should not forget, however, that telecommuting is still a privilege, and not a generalised right of the employee. In Romania it can be a legal entitlement of the employee only if stipulated, from the outset, in the contract of employment or in subsequent addenda.

Of course, in today's world, a world ever more on the move, wasting hours in traffic when going to or returning from the office is becoming increasingly impractical - in crowded cities employees are reportedly wasting 2 to 3 hours daily while commuting to and from the office, i.e. a monthly average of 250 hours wasted.

Given the above, I believe that "virtual work" is the future; however, even as it has many advantages, particular attention should be given to implementation, in order to prevent the inadvertent conversion of the initial advantages into disadvantages later on.

Among the advantages of the employees following the transition to cloud computing, we would like to mention the following:

- **Increased employee productivity** ensured by: the fluency in the use of the e-mail service: interruptions, loss of emails, as well as difficulties in identifying documents disappear. Storage space is increased in cloud computing, and this solution allows users to attach large files. Therefore, there will be no downtime. Working speed and storage capacity are a marked advantage, and the increase of the storage capacity is achieved quickly and at little cost. Also, cloud computing enables employees to work jointly on documents, as well as create streams, identify versions, and by synchronising calendars and tasks, employees will cooperate more smoothly, redundant activities will be eliminated, and any errors can be identified early. Therefore, cloud computing enables the streamlining of work processes, both at
individual and at team level, and employees are able to perform their duties in a much shorter
time.

**Improved communication between employees and improved internal cooperation**

at **company level**. This advantage arises from data centralisation and the standardisation of
their use, the information that the employees can access on the cloud servers being updated in
real time. Also, the improvement in internal communication and cooperation occurs as a
consequence of the fact that employees have access to instant messaging, conferencing, and
video-conferencing options, and that they can work jointly on various documents and projects,
which ensures a higher cohesion among employees, allowing them to act as a team.

The information/data is not lost – **disaster recovery**. Companies frequently face
technical malfunctions. Typically, this solution does not have a back-up, which results in a
major risk of data loss. Cloud computing ensures increased data security, as well as providing
back-up and business continuity, with data replication in at least two locations. As such, should
problems occur, data recovery can be achieved more quickly, as the data is stored in a
professional data centre and not in the company's server room, with fault redundancy.
Therefore, data cannot be stolen/lost, and the storage medium cannot be damaged, which will
improve the overall activity of employees, giving them the guarantee of the fact that the results
of their work will not be lost because, in the event of a technical malfunction of the servers
managed internally by the company or of a failure of the device used to conduct their activity,
all the data shall remain stored in the cloud.

### 3. Disadvantages of cloud computing services, from the employee's point of view

However, the introduction of cloud computing services by companies also results in
some **disadvantages** for the employees, the most important among them being that **data
security** cannot be controlled, as the location of the servers on which the data is saved is
unknown; likewise, the **personal data of the employees is not protected**.

From this point of view, the legal circumstances are complex, as a user's data can be
stored on different computers, located at great distances from each other - sometimes in
different countries. The user can only use the storage space and the services provided by the
cloud company, being unable to obtain information on the systems used and on their location.

Data security is one of the most common problems mentioned in connection with the
use of cloud computing. In a recent study on the use of cloud computing, conducted in 2013
[5], 70% of the Romanian companies (SMEs) surveyed that were not using cloud services
indicated security concerns as the reason for their decision, while at the same time 93% of the
Romanian companies surveyed that were using cloud computing indicated data security as the
main argument in favour of using cloud services. It seems, therefore, that the perception of the
security offered by cloud providers is polarised among the companies using cloud services and
those not using them. For the clients who are sceptical about the security offered by the
provider, especially for those constrained by special requirements (e.g. financial institutions,
medical companies), the use of one-way encryption is not just useful, but necessary, as it
ensures that the data cannot be accessed by the provider or by any third parties.
The National Institute of Standards and Technology pointed out the advantages of using cloud services, noting that the specialised personnel (staff dedicated to addressing security issues), the power of the platform (better able to manage security activities, such as configuration control, vulnerability testing, security audits, and security patches), as well as resource availability (scalability to meet the client's requirements and to recover more quickly from serious incidents, such as countering hacking attacks), superior backup and recovery policies, mobile terminals (the main computing resources are hosted by the cloud provider, the clients using mobile devices to access the data, so that there is less risk that the theft or loss of the mobile devices result in loss of data), and data concentration (data maintained and processed in the public cloud may present a lower risk for an organisation having a mobile workforce, compared to dispersing data on mobile terminals in the field) may actually increase the privacy and security of sensitive data [6], including the personal data of the employees. Moreover, cloud providers are more likely to meet operational and certification standards in highly regulated fields.

4. Regulatory framework

Cloud computing does not have its own separate regulations, either in Romania or in the European Union. The relevant legal framework for the treatment of data used in cloud environments consists of general regulations adopted in the field of personal data processing.

5. Conclusion

Cloud computing is a new field, and this is likely the reason why it is still poorly understood and incompletely regulated. Currently, from a legal standpoint, the need arises to enforce regulations that were issued in different circumstances, and which are thus showing their shortcomings. But, although problems have been identified, usually they are not unsolvable.

Cloud computing may not be suitable for all entities, but for many of them it can be an evolution, based on the fact that the transition from a solution managed internally to cloud computing services has many advantages for the employees of a company.

Increased employee mobility, automatic synchronisation of all the devices connected to the cloud (desktop, laptop, smartphone, tablet) - multiple devices can be connected to the cloud simultaneously, and changes made on one device will be visible to all connected devices - grants employees access to data from any location that has an Internet connection and on any device.

According to a study conducted by Ipsos Mori, 85% of the employees of Romanian companies believe that mobile technologies increase their work performance, and cloud-based solutions are crucial for small businesses, for 64% of their employees. Cloud computing solutions provide employees with the opportunity to connect to and work from anywhere, regardless of the platform they use and without exposing themselves to security risks.
References:

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