Cloud Computing in the Legal Industry

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ABSTRACT

Cloud computing is the future of the next generation computing systems in the world. Cloud technology is one of the globally recognized emerging technologies in the new millennium that are most likely to change people's lives. Organizations with not enough resources to build their own infrastructure can now take advantage of the cloud services to suit their specific needs. Cloud computing is transforming industries, and the legal sector is no exception. Cloud computing in law refers to the legal framework and regulations governing the use of cloud services, encompassing data privacy, security, intellectual property, and jurisdictional issues. The era of cloud computing has just begun, and the time is soon approaching when the use of physical memory devices will become obsolete. This paper considers how cloud computing is revolutionizing legal practice.

KEYWORDS: cloud computing, law, legal industry

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INTRODUCTION

The recent emergence of cloud computing is one of the major advances in the history of computing. Cloud computing is a computing paradigm for delivering computing services (such as servers, storage, databases, networking, software, analytics, and more) over the "the cloud" with pay-as-you-go pricing. The term "cloud" denotes "the Internet," so that "cloud computing" is also called "Internet computing." Cloud computing is a means of pooling and sharing hardware and software resources on a massive scale. Users and businesses can access applications from anywhere in the world at any time. Companies offering these computing services are called cloud providers and typically charge for cloud computing services based on usage [1]. In a rapidly evolving digital world, the legal profession is not immune to the transformative power of the cloud computing technology. Figure 1 show a picture relating to the word cloud for cloud computing [2]. Some features of cloud computing are displayed in Figure 2 [3].

Cloud computing has long since ceased to be the future and has become the reality of the legal sector.

Rather than building, owning, and maintaining their own IT infrastructure, legal businesses can use cloud to access technology resources such as computing capacity, storage, and databases on a pay-as-you-go basis. An industry needs the cloud for the following reasons: (1) Mobile workforce: empowering employees to sift real time data and make decisions on the fly, (2) Minimize disruptions: with the right sort of cloud setup problems can be anticipated and solved quickly, (3) Collaboration: with the right technology, collaboration – as well as transparency and accountability – are easily managed, (4) Innovation: product innovation and process innovation are powerful weapons to survive or thrive in such an environment, (5) Lower cost: No hardware procurement, maintenance, or staff is needed to operate the systems.

Keeping your data secure and private is not easy anymore. There is often ambiguity under which jurisdiction your cloud-based data falls to and laws and regulations differ from country to country. Cloud computing exists in a complex and dynamic legal environment, covering both public and private law.

There are special considerations that must be undertaken when data flows across borders between organizations that operate in two different jurisdictions [4].

CLOUD COMPUTING BASICS

Cloud computing represents a newly emerging service-oriented computing technology. It is the provision of scalable computing resources as a service over the Internet. It allows manufacturers to use many forms of new production systems such as 3D printing, high-performance computing (HPC), industrial Internet of things (IIoT), and industrial robots. It is transforming virtually every facet of modern manufacturing. It is innovating, reducing cost, and bolstering the competitiveness of American manufacturing [5]. Figure 3 shows the symbol for cloud computing [6].

The key characteristic of cloud computing is the virtualization of computing resources and services. Cloud computing is implemented in one of three major formats: software as a service (SAAS), platform as a service (PAAS), or infrastructure as a service (IAAS). These services are illustrated in Figure 4 [7] and explained as follows:

SaaS: This is a software delivery model in which software and associated data are hosted on the cloud. In this model, cloud service providers offer on-demand access to computing resources such as virtual machines and cloud storage.

PaaS allows the end-user to create a software solution using tools or libraries from the platform service provider. In this model, cloud service providers deliver computing platforms such as programming and execution.

In the IaaS model, cloud service providers can rent manufacturing equipment such as 3D printers.

Just like cloud computing, CM services can be categorized into three major deployment models (public, private, and hybrid clouds) [8]:
- ➢ Private cloud refers to a centralized management effort in which manufacturing services are shared within one company or its subsidiaries. A private cloud is often used exclusively by one organization, possibly with multiple business units.
- ➢ Public cloud realizes the key concept of sharing services with the general public. Public clouds are commonly implemented through data centers operated by providers such as Amazon, Google, IBM, and Microsoft.
- ➢ Hybrid cloud that spans multiple configurations. and is a composed of two or more clouds (private,

community or public), offering the benefits of multiple deployment modes.

These models are shown in Figure 5 [9]. Cloud computing finds application in almost every field.

CLOUD COMPUTING IN LAW

Technology is changing much faster than law. Professionals and law firms must transform themselves in order to offer better and more efficient services in an eminently technological society. The cloud enables users to set up a hard drive and securely run software on the Internet, giving them access to essential data, applications, and tools anytime from anywhere – a law office, coffee shop, home office, or even the kitchen table. The use of cloud computing systems and services is becoming more and more widespread as law firms discover how efficient and streamlined they can make their practice. Cloud computing is yet another example of how technology, far from replacing lawyers with robots or machines, helps to improve efficiency. Some benefits of moving to the cloud include stronger security, increased flexibility for remote work, and more scalability.

There are generally no laws directly applicable to cloud computing. However, there are numerous federal and state laws and regulations that may indirectly impact the use of cloud computing applications and use cases. With regard to those laws that may indirectly impact the use of cloud computing, a breach of such laws can result in a variety of consequences such as fines and penalties. For example, there is a patchwork of federal and state privacy laws that may impact the application of cloud computing. Data privacy and security requirements at the state level vary significantly, with breach notification laws in all 50 states. US customers with international operations remain subject to international privacy laws. The procurement of goods and services by state and local governmental bodies is governed by the procurement laws of the state in question. One would wish that there were a set of laws for all nations across the globe. Unfortunately, there generally are not any consumer laws that are directly applicable to cloud computing [10].

APPLICATIONS OF CLOUD COMPUTING IN LAW

Cloud computing is a new computing paradigm and is often synonymous with Internet computing, cluster computing, grid computing, utility computing, P2P computing, service computing, market-oriented computing, and Web 2.0. It is now a concept that is familiar to most lawyers. Examples of successful implementations of cloud computing in law firms can be seen across a variety of legal organizations. Popular cloud applications support streamlined case

management, time tracking, billing, client intake, and collaboration. Some applications of cloud computing in the legal sector are presented as follows:

➢ *Cloud Computing Law:* Cloud computing law refers to the legal framework and regulations that govern the use of cloud computing services. It deals with the legal issues that arise when business and personal assets are stored and processed in the cloud. The law encompasses various aspects such as data privacy, security, intellectual property rights, jurisdictional issues, and contractual agreements between cloud service providers and their clients. The US does not have one all-encompassing law for data regulation across the country. However, US government makes efforts to protect public safety and combat serious crime, including terrorism. Figure 6 represents cloud computing in law [11].

➢ *Managed Cloud Services*: As the legal industry continues to embrace digital transformation, the demand for managed cloud services for law firms is poised to grow exponentially. Managed cloud services offer law firms a strategic approach to leveraging cloud technology, providing comprehensive support for infrastructure management, security, compliance, and optimization. With managed cloud services for law firms, you can offload the burden of managing and maintaining your cloud infrastructure to experienced professionals, allowing you to focus on your core business objectives.

➢ *Law Enforcement:* Law enforcement officials have many responsibilities, such as deterring crime, patrolling assigned areas, monitoring activities to protect people and property, responding to emergencies, etc. Across the nation, they are using the cloud for a variety of functions, such as data backup and disaster recovery. This technology can also be useful in other ways, such as by organizing and storing large amounts of digital media files and evidence. In the law enforcement industry, the challenge of securely managing an ever-growing accumulation of data while keeping it accessible in a mobile environment is accelerating at a rapid speed. Law enforcement officials manage a large volume of personally identifiable information, arrest records, background reports, and other private data considered to be sensitive and confidential information. To protect the privacy of certain individuals, law enforcement is responsible for handling this information in a manner that is secure, ethical, and sensitive. Failure to comply

with certain federal policies can result in hefty fines or other legal implications for agencies found at fault. Switching to cloud-based computing can save law enforcement departments a large amount of money over time [12].

➢ *Documentation:* Documentation is a significant part of a lawyer's profession. Using cloud storage platforms is a great way for a law firm to safely share documents with clients or associates. Legal professionals often deal with voluminous data. Cloud computing offers a scalable solution, adapting to the size and requirements of any legal firm. Not only does it provide an efficient way to store data, but its accessibility makes data retrieval a seamless process, even from remote locations.

➢ *Data Ownership:* In today's digital age, data has become a valuable asset for businesses across various industries. The collection, storage, and analysis of vast amounts of data have revolutionized the way organizations operate and make informed decisions. Who owns the data that is generated and collected? What are the rights associated with this data? These questions have sparked debates and discussions among experts and policymakers. Data ownership refers to the legal and ethical concept that determines who has control and authority over data. It involves identifying the individual or entity that possesses the right to determine how data is collected, stored, used, and shared. When it comes to data ownership, different perspectives exist, ranging from individual rights to corporate interests. From an individual's standpoint, there is a growing awareness of personal data ownership and the need for control over its usage. From a business perspective, data ownership is often seen as a valuable asset that can provide a competitive advantage. Individuals are increasingly concerned about the ownership and control of their personal data. To address the complexities surrounding data ownership and data rights, various legal frameworks and regulations have been developed globally. These frameworks generally seek to strike a balance between individual privacy rights and business interests [13].

➢ *Intellectual Property Protection:* Data privacy is not limited to customer information; it also encompasses protecting a company's intellectual property. Businesses invest substantial resources in research and development, creating proprietary algorithms, formulas, and trade secrets. If these valuable assets are compromised due to weak data privacy practices, it can have detrimental effects

on a company's competitive advantage and market position. Legal frameworks address the need for data protection and security measures. In some cases, data ownership intersects with intellectual property rights and trade secrets [13].

BENEFITS

Cloud computing enables decentralized data processing with the centralized storage of data. Such an approach helps mitigate the need to carry storage devices along with the computer. This further lowers the cost of computing devices and makes digital devices much more affordable. The benefits of using cloud computing for law firms are numerous, ranging from increased accessibility to enhanced data security. The many benefits of cloud computing far outweigh the drawbacks. Cloud services seek to enhance efficiency, collaboration, and security. Other benefits of cloud computing in law include the following [13-15]:

➢ *Cost-effectiveness:* No discussion of the merits of cloud-based services would be complete without addressing the cost savings these platforms deliver for law firms. For starters, cloud computing is more cost-effective, in part because the initial costs of moving to the cloud are far lower than purchasing a server. Cloud computing can be cost-efficient for small businesses, but it can also lead to increased expenditure due to hidden costs. Cloud computing is characterized by five attractive benefits companies can leverage in delivering cost-effective services in the long run. These include the following [9]: (i) On-demand self-service helps the customers avail services without a third party's interference. (ii) Broad cloud network provides universal access to all users across the globe in real-time. (iii) Resource pooling aids the Cloud Service Provider (CSP) to reap economy of scale benefits and provide budget cloud services. (iv) Rapid elasticity allows the customer to utilize the cloud data on-demand as and when required. (v) Measured service permits CSPs to implement a Pay-as-you-go model for their customers.

➢ *Accessibility:* One of the primary benefits of cloud computing for law firms is the increased accessibility and mobility of data. With cloud computing, lawyers and staff members can access files and documents from anywhere in the world with an Internet connection. They can access company files from a variety of devices, including laptops, desktops, tablets, and mobile phones.

➢ *Scalability:* Cloud-based computing is easy to scale. Cloud computing offers scalability and flexibility to accommodate changing business needs. As a law firm grows and expands, it may need to scale up its IT infrastructure to meet new demands. Companies can easily scale their computing resources up or down as needed, without making major investments in hardware or infrastructure.

➢ *Data Storage:* Cloud-based data storage is easier and, usually, cheaper than keeping law firm files on physical servers or in file cabinets. Cloud computing for law firms is a great way to store data because it allows you to access it anywhere in the world. This makes it easy for the legal industry because it eliminates the need for clients to store documents on their servers. Cloud storage options have become increasingly popular among law firms over the years. Cloud computing offers limitless storage capacity, which can eliminate concerns about storage space. Relative to paper filing systems, it's easier and faster to locate documents stored in the cloud. Cloud computing is the future of data storage and access, and law firms are no exception.

➢ *Collaboration*: Collaboration is essential in law firms, and cloud computing has revolutionized the way lawyers and staff work together. Cloud-based software allows law firms to access shared documents and information from any device with an internet connection and to collaborate in real time with colleagues, regardless of their physical location. Cloud computing allows multiple users to edit and work on one file simultaneously, and many services provide social features for communication and data sharing. With cloud computing, lawyers and staff members can access files and documents from anywhere with an Internet connection. This means that they can work remotely without being tied to their physical office space.

➢ *Disaster Recovery:* Cloud computing has dramatically changed how we approach data security as cloud computing provides a solution for disaster backup and recovery. Cloud computing makes disaster recovery easier, as vital data is stored off-site in third-party data centers. Cloud providers often have backup systems in place to ensure that data is not lost in the event of a disaster, such as a fire or flood.

➢ *Protecting Confidentiality:* Client confidentiality is one of the most important aspects of legal practice. Law firms need to ensure that they protect their clients' sensitive information from unauthorized access or disclosure. Cloud-based practice management systems provide secure solutions for protecting client confidentiality.

They offer encryption features that ensure that all data transmitted between users is encrypted, making it difficult for unauthorized parties to intercept or steal sensitive information.

➢ *Efficiency:* Cloud computing saves both time and money. Law firms can take advantage of cloud computing to reduce the cost of their IT administration. By using cloud computing, IT departments can be outsourced to a company that will provide them with access to everything they need without worrying about managing it themselves.

➢ *Reliability:* Cloud service providers invest heavily in robust infrastructure and redundancy measures to ensure high availability and reliability with their cloud based services for law firms. With cloud-based law firm software, firms can enjoy 24/7 access to their data and applications, with minimal downtime or disruptions.

➢ *Flexibility:* The dynamic nature of the legal industry demands solutions that can adapt to law firms' ever-changing needs. Cloud computing provides the perfect answer with its hallmark features of scalability and adaptability. Law firms can say goodbye to costly hardware upgrades with cloud computing and embrace a more flexible and cost-effective approach. Cloud-based legal technology like Clio lets lawyers work securely from anywhere with a strong Internet connection. For many lawyers, the flexibility of remote work is no longer a nice-to-have but rather a necessity. Remote work can also work better for lawyers with families, pets, and other commitments.

➢ *Transparency:* Transparency plays a crucial role in empowering individuals regarding their data rights. Organizations should clearly communicate their data collection practices, including the types of data collected, the purpose behind it, and the duration for which it will be retained. Moreover, individuals should have the ability to exercise control over their data. By providing transparency and control, individuals can actively participate in the data-sharing process and protect their privacy.

➢ *Data Portability*: Data portability is another aspect that empowers individuals by giving them the freedom to move their data between different platforms or services. This allows individuals to switch providers without losing their valuable data or being locked into a particular system. By enabling data portability, individuals are not only empowered but also encouraged to make choices

based on their preferences, fostering competition and innovation among service providers.

Some of these benefits are depicted in Figure 7 [16].

CHALLENGES

Recent years have seen exponential growth in the use of cloud computing to allow greater access to files. While cloud technology offers an impressive range of possibilities, it also creates significant legal challenges for both organizations and individuals. Our laws, largely based on notions of territoriality, struggle to respond to technology in which lines on maps are largely irrelevant. Now more than ever, organizations are migrating workloads to the cloud so they can rapidly scale their business services in order to meet demand. But moving too quickly can cause long-term challenges. It is important to have the right people, processes, and tools in place to maximize success. Internet access is required in order to access your information stored in the cloud. Other challenges of cloud computing in law include the following [13,17]:

➢ *Privacy:* A primary challenge deals with privacy issues associated with the use of data stored in the cloud. Privacy is a big concern when outsourcing your backup, especially with lawyer-client privilege to maintain. Data privacy regulations and vendor agreements are just some of the issues that need to be considered before jumping on the cloud bandwagon. While threats from within and from without do exist, governments create laws that make it possible for malicious individuals or agencies to take advantage of the powers that they grant. It is done in the name of security while taking away your rights to privacy.

➢ *Security:* The waging cybersecurity challenges have turned cyberspace into cyber warfare in the form of ransomware, distributed denial of services (DDoS), and spyware. Sharing sensitive company data with a third-party cloud service provider can pose a security risk, as hackers may be able to access the information. A reputable cloud solution will be more secure than paper files and files stored on a local server. The cloud application security problems are illustrated in Figure 8 [18].

➢ *Ethical Concern:* Ethical concerns may arise when moving client data into the cloud. As the use of cloud computing by lawyers increases, what are the ethical implications for lawyers storing client files remotely? In short, lawyers must observe their long-standing ethical obligation to preserve client confidence and conduct due diligence into any service or vendor

used to store client information. The Legal Cloud Computing Association (LCCA) released its security standards providing guidelines for cloud service providers to ensure adequate protection of client data stored in the cloud in a manner consistent with lawyers' ethical obligations. The starting point for legal ethics and cloud computing for lawyers is an attorney's obligation to keep client matters confidential.

➢ *Regulatory Compliance:* Various jurisdictions have regulations concerning data storage and privacy. Law firms need to ensure their cloud-based operations comply with these regulations. Following good rules and regulations will help create a safe cloud environment. Legal professionals have long been wary about a move to the cloud environment with specific concerns about data privacy regulations at the core of that apprehension. The US does not have one all-encompassing law for data regulation across the country. Instead, it has implemented sector-specific data laws and regulations that work together with state-level legislation in order to keep citizens' data safe, like HIPAA.

➢ *Resistance to Change:* The legal industry has always been reluctant to move to the cloud. Although resistance to change can be a daunting force in the legal industry, overcoming that resistance is necessary for a successful migration to the cloud. The problem here lies in the fact that companies do not understand the idea of moving to cloud and do not know how to reorganize the existing infrastructure. Legal professionals sometimes believe that migrating to the cloud means giving up control over their data and their critical documents because their servers will not be located nearby.

➢ *Lack of Clarity:* One of the primary challenges is the lack of clarity surrounding data ownership. With the vast amount of data generated and shared online, it can be difficult to determine who owns the data and what rights they have over it. This ambiguity can lead to disputes and legal complexities.

CONCLUSION

Cloud computing is a way of delivering computing resources as a utility service via a network, typically the Internet, scalable up and down according to user requirements. It has become one of the most skyrocketing, transformative, and innovative technologies of the 21st century, revolutionizing almost every industry on the planet. The legal industry is rapidly changing, and law firms that want to stay ahead of the curve must embrace cloud computing.

Many businesses have embraced the cloud, especially in recent years, as flexible work arrangements have become the norm. As law firms increasingly use cloud computing for their day-to-day work, managing their infrastructure has become increasingly important. This type of technology has allowed law offices to increase efficiency, streamline workflows, collaborate seamlessly with clients globally, and access resources from anywhere at any time. As technology continues to evolve and the legal industry works hard to stay on top of advancing innovations, cloud computing stands out as a major area of opportunity. More information about cloud computing in law can be found in books in [19-30] and the following related journals:

➢ *Journal of Cloud Computing*

➢ *IEEE Cloud Computing*

➢ *IEEE Transactions on Cloud Computing*

➢ *International Journal of Cloud Applications and Computing*

➢ *International Journal of Cloud Computing and Services Science*

➢ *i-manager's Journal on Cloud Computing*

➢ *Richmond Journal of Law and Technology*

➢ *Masaryk University Journal of Law and Technology*

➢ *Journal of Law and Emerging Technologies*

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Figure 1 The word cloud for cloud computing [2].

Figure 2 Some features of cloud computing [3].
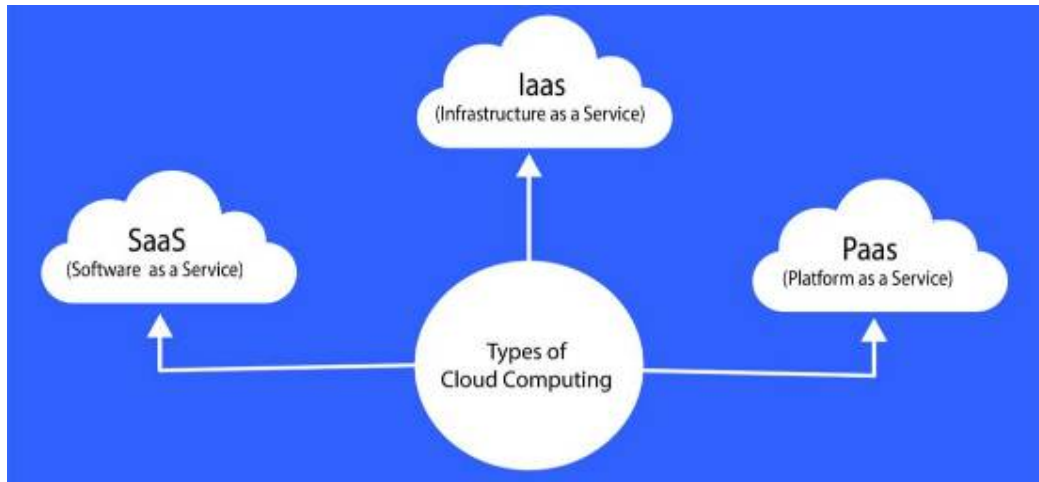

Figure 3 The symbol for cloud computing [6].
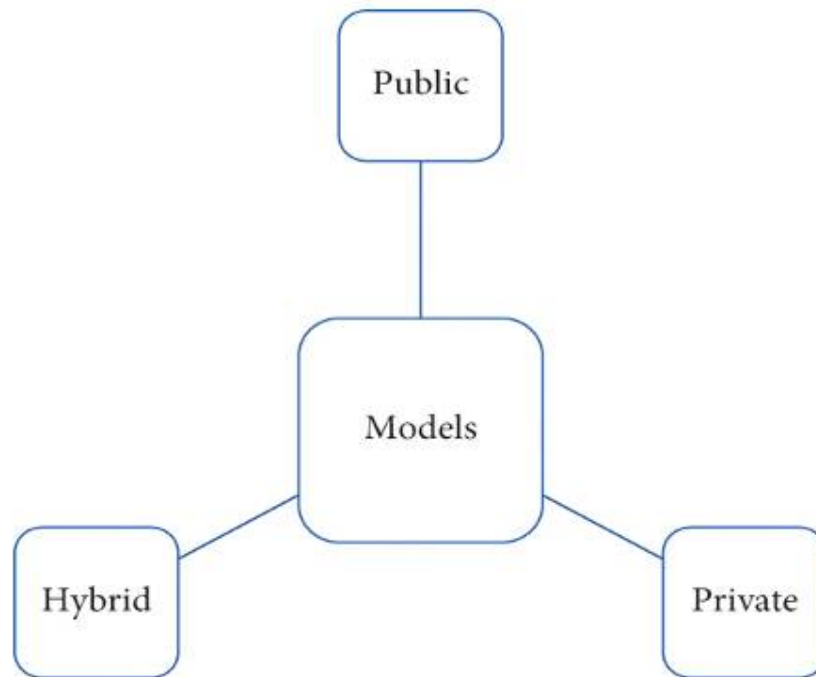
Figure 4 Three types of cloud computing [7].

Figure 5 Cloud computing models [9].

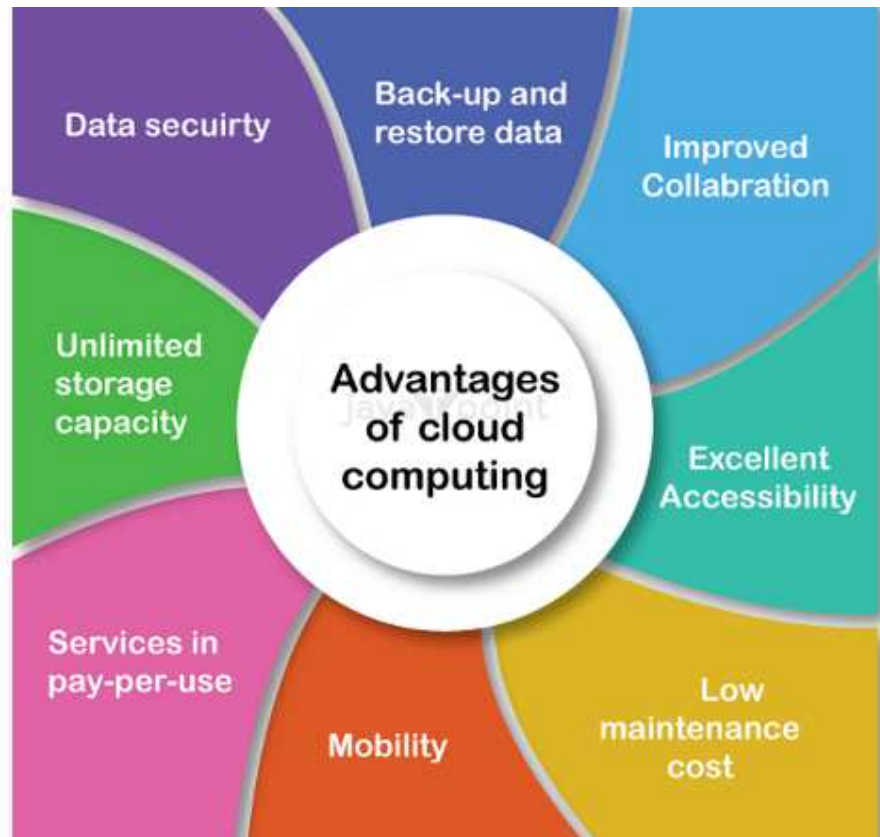**Figure 6 Representation of cloud computing in law [11].**

Figure 7 Some benefits of cloud computing [16].

Figure 8 Cloud application security problems [18].