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## IP ISSUES IN CLOUD COMPUTING

### ABSTRACT

Cloud computing refers back to the mode of storage of records and statistics that issues providing hosted services over the internet. essentially, it refers back to the pastime taken on by using its service businesses for handing over storage requirements as a service to an agency of giving up-recipients. all cloud computing modes rely significantly on useful resource and data sharing. this form of records center putting authorizes corporations to get their applications up and walking faster, with easier manageability and barely any reservation and eases it, groups to modify greater promptly, it's it property specifically servers, storage, and networking to satisfy the irregular and unpredictable business requirement. the negative aspect is that sizable awareness of statistics at a single middle makes it extra at risk of cyber-attacks; and the immoderate energy given to cloud groups to control assets amplifies the chance of potential untrustworthy conduct. the machine seems to be in rising stages in India. the truth, although, is that, cloud computing is dubious in India given that cloud vendors do not take cloud computing due diligence very in reality. cloud computing has emerged as one of the most up to date subjects in computer and statistics era offerings. however, whilst information and offerings flow to the cloud, there are some of the felony issues, inclusive of highbrow assets issues, for both cloud computing vendors and users to keep in mind. these are complicated troubles, and a detailed dialogue is beyond the scope of this article. alternatively, this text is meant to highlight some of the problems and questions relating to Intellectual Property rights raised via cloud computing.<sup>1</sup>

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<sup>1</sup> AMAZON WEB SERVICES, <http://aws.amazon.com/> (last visited Mar. 3, 2014).

## KEYWORDS

Cloud computing, IPR, Technology, IT Companies, Computer Data

## INTRODUCTION

Cloud computing is a brand new paradigm for hosting and delivering offerings using the usual protocols of the internet. it refers to a carrier-orientated structure that offers ubiquitous and convenient computing, more flexibility, on-demand offerings, the reduced overall cost of possession, decreased facts generation overhead for the cease-consumer, and plenty of different matters. it permits access to a massive amount of computing energy in a fully virtualized mode with the aid of aggregating a configurable pool of sources that are rapidly provisioned and released dynamically. it also offers the functionality to make use of scalable, distributed computing environments within the confines of the net with minimal control effort while keeping an unmarried coherent gadget view. cloud computing is continuously gaining recognition inside the facts technology enterprise, and so an increasing number of problems and demanding situations are rising that need to be treated for the success of this paradigm. this paper gives an advent of cloud computing, and a comparative have a look at cloud computing and grids. moreover, we recommend pinpointing research problems inside the cloud computing paradigm and mathematical expertise of several issues among them. cloud computing is the lengthy held dream of records technology visionaries like john McCarthy who counseled for the duration of his public speech at “MIT” in 1961 that computer time-sharing era may lead to a destiny in which computing strength and even unique application might be offered via the application commercial enterprise version. it's far one of the most essential and quickest growing it fashions for excessive-performance computing primarily based on “on call for” it services and products.

The cloud has supplied a bunch of benefits for organizations, however, it has additionally introduced headaches like the need to vet ownership problems in terms of IP rights. as corporations keep to rely greater on cloud computing, problems like security and privateness nevertheless generate problems- despite the fact that those concerns are easing, as both agencies and business cloud carriers have made a wonderful deal of progress in these areas over the past years. but, there may be every other vicinity of governance and safekeeping at the horizon that many agencies nevertheless have not adequately addressed: the ownership of packages that they originate or sponsor inside the cloud.

It is often the case that the cloud service issuer will now not continually personal the Intellectual Property rights (IPRs) in the software this is the situation of the cloud computing service. in such instances, it's miles essential for the cloud provider company you bought the proper to sub-license the third celebration software program to its clients. all the contractual preparations will then be between the cloud service issuer and the patron direct.

There are many troubles surrounding the licensing of content material too. possibly too many a patron, the terms and conditions supplied by way of many cloud service companies encompass a vast license allowing the service provider to apply any content saved on its servers and regularly invariably and irrevocably. makes use of may be restrained however IP right to skip the content to 1/3 events or use it for the motive of selling the cloud computing service is often reserved. this could no longer be suitable for a good deal of the facts customers could be trying to keep (including non-public statistics, 1/3<sup>rd</sup> celebration IPRs or exclusive statistics contained in, or connected to, e-mails). the licence may be implied by using necessity or commercial enterprise efficacy, however, clients ought to take the time to training session any rights they're agreeing to offer to the service company. it must be remembered additionally that the cloud provider issuer will are looking to exclude all liability for content saved or posted on its services and will usually include a proper in its preferred terms to take away any data from its servers.

Discussing the above problems, this article seems to recognize the appropriateness of cloud computing in India, bearing in mind that India does not have any devoted regulatory framework to hold the same. the premise for the careful reputation of cloud computing in India may be credited to jurisdictional issues, inadequate data security, and absence of statistics protection legal guidelines, erasing mechanism, lack of privateness laws poor watch over records managing, insufficient records security, licensing and jurisdictional issues. this paper broadens look for to advocate positive structures and events that can be approved to overlay avenue for more great adoption of cloud computing in India.<sup>2</sup>

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<sup>2</sup> HADOOP, <http://hadoop.apache.org/> (last visited Mar. 3, 2014).

## METHODS OF CLOUD COMPUTING:

### PRIVATE CLOUD:

The cloud infrastructure is provisioned for specific use through a single organization comprising multiple purchasers (e.g., commercial enterprise gadgets). it is able to be owned, managed, and operated with the aid of the business enterprise, a 3rd birthday celebration, or a few aggregates of them, and it could exist on or of premises.

### COMMUNITY CLOUD:

The cloud infrastructure is provisioned for specific use by means of a specific network of consumers from companies that have shared worries (e.g., challenge, safety requirements, coverage, and compliance concerns). it may be owned, controlled, and operated by way of one or extra of the companies in the network, a 3rd celebration, or a few mixtures of them, and it is able to exist on or of premises.

### PUBLIC CLOUD:

The cloud infrastructure is provisioned for open use through the general public. it could be owned, controlled, and operated with the aid of a commercial enterprise, educational, or government agency, or a few aggregates of them. it exists at the premises of the cloud provider.

### HYBRID CLOUD:

The cloud infrastructure is a composition of two or extra wonderful cloud infrastructures (non-public, community, or public) that remain specific entities, but are certain collectively by means of a standardized or proprietary generation that allows statistics and alertness portability(e.g., cloud bursting for load balancing between clouds).<sup>3</sup>

THREATS FACED BY USING CLOUD COMPUTING: Notwithstanding being futuristic and green, cloud computing nevertheless has some issues which might be to be addressed for gaining further acceptability among the clients. cloud computing has been designed with architecture to let the consumer get entry to records from nearly everywhere on an actual-time basis, but the following demanding situations nevertheless persist; which makes way for hindrance :

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<sup>3</sup> [www.researchgate.net](http://www.researchgate.net)

### LICENSING:

Present software licensing models won't facilitate cloud deployment especially from the point of cloud provider delivery

### LOCATION OF DATA:

Seeing that, the facts hosted at the cloud shall now not be present in traceable static location issues over the ownership, accessibility, privacy, and protection of the facts are of the high situation; which paves manner for jurisdictional conflict.<sup>4</sup>

### UP FRONT DUE DILIGENCE:

One of the quality methods to host a successful cloud computing platform enjoy is to perform suitable due diligence at the capacity providers. commonly, multiple companies are capable of providing for the required cloud computing offerings.

### NEGOTIATION:

There has to be absolute clarity among the carrier company and the recipient customer who is going to perform and function on this version of cloud computing. all the liabilities, dangers and management options ought to honestly be discussed and it will be a mandate for each the events, to keep tune and trade of any traits whatsoever

### AUDIT AFTER THE AGREEMENT:

After the agreement is finished and the offerings have begun, it's far nevertheless vital to audit the service company to make certain compliance with the phrases of the settlement. usually, in-character involvement in auditing enables expedite the manner

### DATA OWNERSHIP:

One of the number one issues expressed by way of corporations considering the use of cloud offerings is the difficulty of statistics ownership. once information leaves the confines of the employer's personal computer machine, questions immediately arise over who owns that information.

### CONFIDENTIALITY / NON-DISCLOSURE:

If the carrier issuer ought to have to get admission to the content material of statistics, then it's miles extraordinarily critical that the agreement encompasses some type of nondisclosure provision.

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<sup>4</sup> [www.csoonline.com](http://www.csoonline.com)

### ACCESS AND CONTROL:

Even as capability clients of cloud offerings commonly express concern approximately statistics possession troubles, often their concerns have more to do with getting right of entry to and manage over the information.

### DATA LOSS AND BACKUP:

Whilst all capacity customers of cloud services are worried about records loss, in fact, most reputable cloud service providers offer a more robust mechanism for ensuring statistics in opposition to loss than almost any of their customers can offer. that does not however mean that losses do not occur.

### PRIVACY ISSUES: WHAT CAN THE CLOUD PROVIDER DO WITH THE USER DATA?

Cloud providers regularly manage the massive quantity of private data from tens of millions of customers of cloud carrier, and the statistics from one person commingles with the 4 statistics of other users. there has been a debate on cloud computing and privacy from an agreement in the author's guild, inc. v. Google inc. the stipulations of the settlement accredited Google to maintain on providing copies of books on their cloud-based Google books platform in going back for a stipulated amount to the authors. although privateness changed into now not the primary problem within the agreement, many public interest agencies were alarmed that the agreement did now not acknowledge the security of the privateness of its customers. the problem raised with the aid of patron watchdog in 2010 become that the agreement "still contained no regulations on what records will be accumulated, and contained handiest confined restrictions on how that data cloud be shared". the settlement agreement did not deal with whether or not a consumer's reading alternatives may be shared with information retailers or governmental units acting without a search warrant. consumer watchdog was involved that the agreement gave Google a monopoly over the e-book-search and e-book-subscription markets and at the identical time gave it unrestrained authority to percentage private information approximately users with outside entities. a collection of objecting magnificence individuals to the Google settlement, privateness authors and publishers, asserted that the shortage of privateness protections in the Google agreement settlement might deter readers from studying and buying their works. consistent with the privacy authors if readers have been worried that information about their studying conduct might be disseminated to the authorities, divorcing spouses, or different fascinated third events, these readers might be less possibly to view books

on arguable subjects. now not extraordinarily, the privateness authors included numerous authors who had penned books on touchy or controversial subjects.<sup>5</sup>

### PATENT INFRINGEMENT

The multi-jurisdictional nature of cloud computing, and the unsure nature of the "cloud," provide rise to some viable complications for patent owners or licensees looking to assert their patents in opposition to the potential infringer. first, it is able to be hard to be expecting what activities definitively constitute infringement. if a selected technology is patented in Canada, however, a competitor's cloud computing carrier makes use of infrastructure and/or performs some or all of its information processing outdoor of Canada, the Canadian patent(s) may not be infringed. at the equal time, a party wishing to avoid infringement definitely by using locating an element of a machine protected by means of a competitor's patent, or by appearing a step of a process protected by way of a competitor's patent, in a distinctive US ., may not reach fending off infringement. the regulation in Canada isn't always clean in this factor. additionally, due to the fact the "cloud" may also include additives in more than one nation, the law in other nations may additionally need to be considered. Second, cloud computing systems can also consist of multiple additives, each operated by means of a distinct celebration. these additives may be contracted out to yet some other employer or agencies, who then uses those components to offer offerings to customers. due to the fact special events are chargeable for imparting different elements of the system in this scenario, it is able to be that no unmarried celebration infringes all the elements of a patented invention. as an alternative, the exercise of the elements of the discovery can be divided between two or more parties. the Canadian patent act does not provide for divided infringement, and the issue has not been considered by using the courts in Canada.<sup>6</sup> Third, even supposing the hardware or procedures utilized in a cloud computing machine does infringe patent rights, detecting the infringement may be hard. as noted above, a consumer of a cloud computing service won't have any indication of wherein records storage and processing takes place. for that reason, reverse engineering at the person's end to discover infringement may not be feasible. a carrier provider's infrastructure may not be publically handy in a way that lets in for green detection of patent infringement. in view of the foregoing, one may additionally bear in mind whether or not any customer-facet elements of a cloud computing gadget are eligible for patent safety or for safety below different Intellectual

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<sup>5</sup> William Jeremy Robison, Free at What Cost? Cloud Computing Privacy Under the Stored Communications Act, 2010 GEO. L.J. 1195.

<sup>6</sup> Author's Guild, Inc. v. Google Inc., No. 058136(DC), 2009 WL 5576331(S.D.N.Y. Nov. 13, 2009). <https://casetext.com/case/guild-v-google-2>

Property Regimes, which includes copyright, as an instance. activities at the consumer-aspect can be more localized and readily detectible. but, when acquiring safety for purchaser-side factors of a cloud computing gadget, one has to hold in mind who the capability infringer may be. it could no longer be in an enterprise's great interest to say patents towards the users of a cloud computing carrier, on the grounds that which could alienate those users from ever becoming customers. however, if the proper factors may be proved, a carrier provider may be answerable for inducing the customers to infringe.

### COPYRIGHT INFRINGEMENT

As stated above, cloud computing entails the records within the cloud in preference to domestically. this raises additional, potentially complex intellectual assets problems. for example, the nebulous nature of cloud storage might also complicate a copyright infringement evaluation. copyright legal guidelines range from jurisdiction to jurisdiction. what constitutes copyright infringement in the single USA may not in any other. consequently, while records are saved in multiple locations, it can be much less clear whether a copyright has been infringed in a specific jurisdiction than in conditions in which the area of a piece is without problems identifiable. another issue referring to copyright is whether cloud storage provider vendors can be held responsible for copyright infringement. Canadian jurisprudence has held that a web carrier provider appearing as a middleman for verbal exchange, and not itself engage in acts that relate to the content of the verbal exchange (i.e. imparting "a conduit" for information communicated by others), shielded from legal responsibility via a provision of the Canadian copyright act. however, the query of whether or not cloud garage carriers necessarily healthy this definition of simply being an "intermediary" offering a "conduit" for facts stays open. therefore, the quantity to which cloud garage carriers can be protected against legal responsibility for infringement underneath Canadian copyright regulation, based totally on the records stored for his or her users, is presently doubtful.

### CONFIDENTIAL INFORMATION – TRADE SECRETS

Some other subjects regarding cloud garage are the safety of private and exclusive facts, which includes alternate secrets. before uploading exclusive facts to the cloud, a person must do not forget what form of the obligation of confidentiality is owed to the person via the cloud storage service provider. does that responsibility of confidentiality amplify to sub-contractors used by the carrier issuer? a capacity person of a cloud garage service must additionally keep in mind what is going to appear to information in the event that the cloud storage service is terminated.



## LAWS IN INDIA RELATING TO CLOUD COMPUTING:

One of the fundamental loopholes of cloud computing services in India is that there is no unique law prevailing over the possession of information on a cloud. normally the provider supplying agencies possess the information unless it has been contractually agreed among the events. this depicts the patron's information to various perils as the rights of such records are vested with the cloud provider. beneath the facts technology act of 2000, a cloud provider company isn't chargeable for any1/3-celebration statistics made to be had by way of him, if he indicates that such infringement or offence changed into dedicated without his focus or that he has exercised due diligence as may be prescribed with the aid of the authorities for the prevention of such offence.<sup>7</sup>

## CONCLUSION

The leading cause of why companies pick cloud computing over some other course is due to the fact the data is being stored online, getting rid of the chance of information being misplaced or destroyed. cloud computing also has many shortcomings that want to be sorted, as an instance, there are a number of privateness and safety issues associated with the garage of facts on the internet. moreover, there may be always a risk of dropping internet connectivity that can cause interruption inside the paintings to go with the flow of an employer. professionals in the discipline preserve that cloud computing is more secure than the various conventional means of fact storage along with tough disks, servers and so on., though corporations nonetheless take the risk of statistics being stolen by any outsider hacking into the safety scheme of the cloud. the most ground why agencies are not choosing cloud offerings is the dearth of protection or security. then again, the conventional garage manner additionally its present situation just like the servers also can be hacked into by using outsiders and difficult disks may want to crash and ruin the saved data. coming to the Indian aspect, cloud computing is a new notion and there may be no regulation that exclusively governing it and the law currently lacks clearness. queries as to the relevant regulation and jurisdiction still remain unanswered. despite the fact that businesses are substituting from traditional techniques of storage to cloud computing due to the price effectiveness. the suggestion the authors offer is that cloud computing may not be idyllic for all organizations because of the numerous problems added approximately in the article, however, it's far cost-powerful and suitable for worldwide groups to use with a purpose to shop statistics which can be retrieved at any time from any part of the sector.

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<sup>7</sup> Information Technology (Reasonable security practices and procedures and sensitive personal data or information) Rules, 2011, Gazette of India, part II section 3(1), R.7 (Apr. 11, 2011).<https://www.wipo.int/edocs/lexdocs/laws/en/in/in098en.pdf>