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Cloud Storage and Security Aspects for Cloud Computing

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ABSTRACT: Background / Objectives: Cloud computing enables sharing of resources through internet. Cloud computing is also known as internet computing. To avoid over burden of vast data in personal computer and local server, user can store their information in remote server. So that users can access at any time. But in data privacy protection retrieval process is one of the most challenging research works in the cloud computing, because of user's secret data which is stored in cloud.

Methods: Cloud storage allows data stored remotely to be temporarily cached on remotely store their data and enjoy the on-demand application and services accessing data easily using local data storage and maintenance. The apple company is one the best know a company around the world, a great innovative the company has created is the cloud. A user is the great solution not only to store data but also to Share data amount all of the apple products.

Findings: To check the integrity of outsourced data and be the auditing process should bring no new vulnerabilities towards the user data privacy benefits are low expenditure, easy to access, data recovery, and flexibility.

Application: Multiple users can see different benefits of cloud storage from a single user to size company.

KEYWORDS: Cloud Computing, Storage, Cloud Security, Privacy, Integrity, SLA

I. INTRODUCTION

The concept of cloud computing enables global, convenient, on-demand of network access to shared pool of Configurable resources that can be provided and released with a minimal management effort and service provider interaction. Receiving a great deal of the attention, in publications and users, this cloud computing is a subscription-based service where you can secure computer resources and networked storage space. Thus, security condemnation of cloud computing have included a murky mixes of all ongoing and new issues. To add to their confusion, some have condemned the term cloud computing as too broad. Recent development in the field of cloud computing have immensely changed the way of computing as well as the concept of the resources in a cloud based computing infrastructure, the resources or normally in someone else's network and access remotely by the user. In this study, the security issues and concerns of cloud computing are discussed and that need to be taken into account in the deployment towards a cloud based infrastructure.

II. CLOUD STORAGE WORKS

At the simplest level, cloud storage can have one user access with one server. The users can upload their data through internet and store their data to remote server for safe keeping. In a scenario where that server was to malfunction, retrieving your data files would not be impossible until that the server came back online.

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From a client standpoint, this method is unreliable and ineffective. So users would reject such an unreliable product in the market place. The main idea of figure 1(storage of clouds) is to be a feasible business; the basic level of cloud storage would have to be expanded immensely to identify the issue of reliability.

III.BENEFITS OF CLOUD STORAGE

Cloud storage benefits are low cost, easy to access, data recovery, and flexibility. These Multiple users can see these different benefits of cloud storage from a single user to large size company. The Apple company is one of the best companies around the world, a great innovative company has created is the iCloud.

For Apple a user this is a great solution for not only is to store data but also to share data amount all of the Apple products. Once the data is uploaded to the iCloud, then the data is downloaded to all the devices. However, the only devices using the iOS 5 can access the iCloud services. For this fortunate user of the iOS, the best portion of the iCloud service is the 5GB of free storage space. Another great benefit of using the iCloud is the service of backup, a copy of all your data will remain store with Apple product. In that case you lose any of your data then that you can get back your data through Apple backup service. The backup service of this product is great and good, as we all have suffer the lost of data, you maybe just finished your particular project when the computer crashes, resulting in the lost of the created document. With the iCloud backup, we can feel more secure knowing that we can recover our valuable data in this situation. Most cloud service providers only have an upload transfer rate of 2-3 Mb/sec, which is fine for backing and archiving files but is likely not sufficient enough for production data¹.

For single users, that they do not use the Apple devices there are other sites that provide cloud storage for few to no cost. Rack space "Cloud Files" are presented in Figure 2. Enterprise cloud storage is the one which is most popular and simplest cloud storage solution offered today, and it costs 15¢/GB only (Figure 2). Another great service is Live drive, which has "rapidly developed service to store more than 10 billion data files for its worldwide customers and the service is growing at a rate of over 20 million files each day" (Cloud Storage Providers).

IV.FEATURES OF THE CLOUD

After reviewing the analysis done, we have concluded that cloud storage has its benefits and is drawbacks, what does that mean, what is the future for cloud storage? "In 2011 was a year of figuring out what storage works best in what infrastructure, 2012 will be the year that innovation soars within the industry"².

Three predictions for the 2012; one: The software model will prove essential for storage; hardware will become increasingly insufficient; two: Enterprises will provide anytime, anywhere access to data; and Three: Enterprise replication standards will be adopted in the cloud. For prediction number one he thinks that hardware will become impractical and that the software model for storage will prove essential.

V. SECURITY ASPECTS

Clouds are huge pools of easier to usable and accessible virtualized resource. These computing data can be dynamically reconfigured to adjust a variable load (scale), allowing the optimum resource utilization. Security aspect is a pay-per-use model in which Infrastructure Provider by means of customized Service Level Agreements (SLAs) offers guarantees typically exploiting a pool of various resources. Organizations and individuals can benefit from mass computing and the storage center, provided by many companies with stable and strong cloud architectures. Cloud computing incorporates virtualization, on-demand deployment, Internet delivery of services, and open source software. From one point of view, cloud computing is nothing new because it uses various approaches, concepts, and best practices that have already been established⁵.

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From another point of view, everything is new because cloud computing changes how we invent, develop, deploy, scale, update, maintain, and pay for the applications and infrastructure on which they run. The cloud computing works with the help of internet and central remote servers, which maintain the data and applications. This computing allows customers to use this application without installation and access directly their personal files at any computer with the help of internet access.

VI. SECURITY MODELS

The Virtual machine extending the edge of clouds makes the disintegration of the network boundary, thereby affecting almost the aspects of all security, the traditional physical isolation and hardware-based computer. But the virtual server comes from the logical server group brings a lots of security issues. The traditional data center security measures on the edge of a hardware platform, while cloud computing may be a server in a number of virtual servers, the virtual server may belongs to different logical server group, virtual server, therefore there is the possibility of attacking each other, which brings virtual servers lots of a security threats. Environment of mutual attacks between the virtual hardware/software security infrastructures cannot stop the clouds, or SLA configurations; usually, Mis-configuration incidents could risk the entire security of the system. The second is a Secure Resources Management Policy (SRMP) that controls the management roles and privileges. Between vendor and user, allowing vendors to focus more on the software itself rather than the underlying framework. Applications on the Cloud include Software as a Service system and Multi-tenant databases. A Cloud system dynamically allocates computational resources in response to customers' resource reservation requests and in Cloud system has simplified the deployment of large-scale distributed systems for software vendors. The cloud system provides simple and unique interface accordance.

From the outcome of this research, the study propose an IaaS (SMI) as a guide for accessing and enhancing security in each layer of IaaS delivery model, which is shown in the Figure 4. SMI model consists of three sides: IaaS components, security model, and the restriction level. The security model side includes as three vertical entities where each entity covers the entire IaaS components. The front side of the cubic model components of IaaS was discussed thoroughly in the previous sections. The first entity is Secure Configuration Policy to guarantee a secure configuration for each layer in IaaS Hardware/Software, or SLA configurations; usually, Mis-configuration incidents could risk the overall security of the system. The second is a Secure Resources Management Policy.

VII. CLOUD SECURITY ASPECTS

In the last few years, cloud computing has grown from being a promising business concept to one of the fastest developing segment of the IT field ,now recession-hit companies are increasingly realizing that simply by tapping into the cloud can gains the faster access to best-of-breed business³.

7.1 Security

In Figure 5, people would think about where is your data files more secure, on your local hard drive or on high security servers in the cloud? Some talk about that customer data is more secure when managed it internally, while others talk about that cloud providers have a strong incentive to maintain their trust and as such employee a higher level of security system. However, in the cloud computing your data will be distributed over all these individual computers regardless of where your base repositories of data files are ultimately stored. Industrious hacker's can intrude virtually on any server, and there are some statistics to show that one-third of result breaches from stolen or lost laptops and other devices and from the employees accidentally exposing their data on the Intranet, with nearly 16 percent due to the insider theft. An overview of security flaws and attacks on cloud infrastructures is given. Some examples and more recent advances are briefly discussed.

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7.2 Privacy

Different from the traditional computing model, cloud computing utilizes the virtual computing technology, client personal data files may be scattered in various numbers of virtual data center rather than stay in the same physical location, even though across the national borders, at this time, data privacy protection will face the controversy of different and many legal systems. On the other hand, users may leak secret (hidden) information when they accessing cloud computing services. Unauthorized person can analyze the critical task depend on the computing task submitted by the users.

7.3 Reliability

Servers in the cloud have the same problems as your own resident local servers. The cloud servers also experience downtimes and slowdowns, only the difference is that users have higher dependent on cloud service provider (CSP) in the service model of cloud computing. There is a huge difference in the CSP's service model, once you select a particular cloud service provider, you may be locked-in, thus bring a potential business security risk.

7.4 Legal Issue

Regardless of efforts to bring into line the lawful situation, as of 2009, suppliers such as Amazon web services provides the major markets by developing the restricted road and rail network and letting users to select the "availability zones". On the other view, worries stick with the safety measures and confidentiality from the individual of all the way through legislative levels.

VIII.RESULT AND DISCUSSIONS

Figure 1 indicates the storage of cloud. The cloud storage can be used to expand immensely to identify the issues of reliability. The various kind of information can be stored on cloud such information are sounds, videos, music, documents, files, contacts and pictures etc.

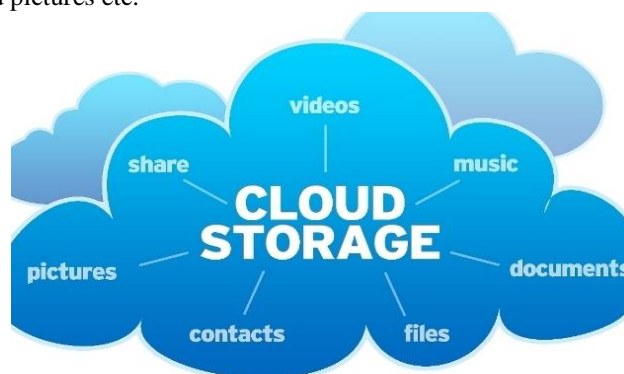


Figure 1. Storage of clouds

Enterprises will provide anytime anywhere access to data. Enterprise replication standards also adopted in the cloud (Figure 2). Enterprise cloud storage provider's gives guarantee and reducing the cost of infrastructure and management while improving accessibility of data files.

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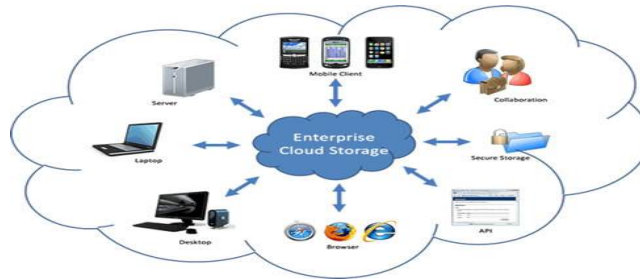


Figure 2. Enterprise cloud storage

Figure 3 indicates the data security lifecycle. This lifecycle provides much more efficient computing by centralizing storage, memory, processing and bandwidth. This lifecycle diagram shows (Figure 3) how data are stored in cloud with security process. The various process in lifecycle are create, store, use, share, archive and destroy



Figure 3. Data security lifecycle

Figure 4 represents the security model. This Security model can be used to access and enhance security in each layer. In this security model the diagram shows how the IaaS, PaaS and SaaS are working in cloud with secure manner. The Proposed architecture focuses on the core backend of the cloud computing platform⁴.

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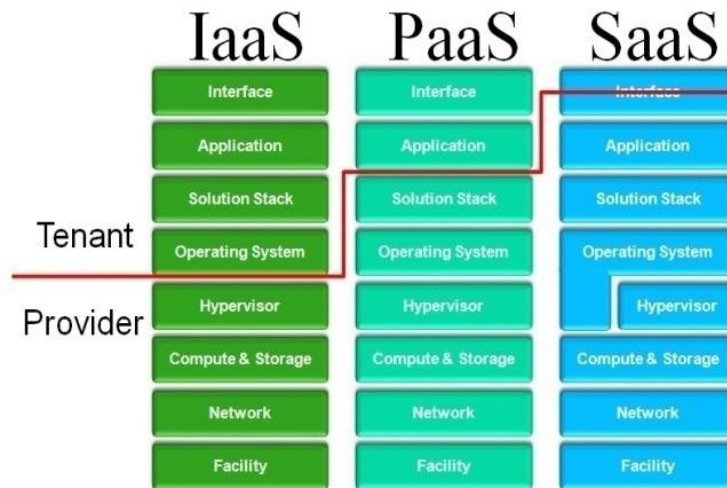


Figure 4. Security mode

Figure 5 represents the security report. This diagram will give the report of unauthorized person accessing and the threat histories.



Figure 5. Security report

IX. CONCLUSION

In this study various layers of infrastructure as a service have been discussed and also provided the security to user by having a public key infrastructure (PKI) on each layer. The SLA discusses only about the services provided to the users and the waivers given to the users. If the required services are not met with the agreement, these waivers don't really help these users fulfilling their losses. Security holes associated with the IaaS implementation are discussed. The security problem and their issues presented here concerning the security of each and every IaaS component in addition to which the recent solutions are proposed.

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