

Image Data Security Concerns in Cloud Computing: A Review

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ABSTRACT

The significance of Cloud Computing is growing and it is getting an increasing awareness in the technical and industrial community. This paper is mainly focused on the security concerns of cloud computing and techniques to prevail over the data privacy issue. Before studying the security concerns, the definition of cloud computing and brief discussion to under cloud computing is presented, then it surveys the cloud security issues and problem faced by cloud service provider. Thus, defining the authentication, integrity and confidentiality techniques that will be used to overcome the problem of image security.

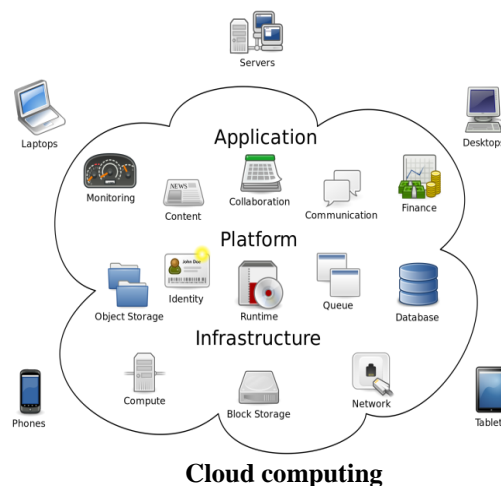
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Introduction

Cloud computing is typically defined as a type of computing that relies on sharing computing resources rather than having local servers or personal devices to handle applications. In cloud computing, the word cloud (also phrased as "the cloud") is used as a metaphor for "the Internet," so the phrase cloud computing means "a type of Internet-based computing," where different services — such as servers, storage and applications — are delivered to an organization's computer and devices through the internet [1]. Cloud computing is comparable to grid computing, a type of computing where unused processing cycles of all computers in a network are harnessed to solve problems too intensive for any stand-alone machine [2].

Cloud computing has formed the conceptual and infrastructural basis for tomorrow's computing. Cloud services permit individuals and businesses to utilize software and hardware that are handled by third parties at remote locations. Instead of maintaining data on own hard drive or revising applications for needs, use a service over the Internet, at another location, to accumulate information or use its applications. The cloud computing model agrees to access information and computer resources from wherever a network connection is present. Cloud computing offers a shared pool of resources, together with data storage space, networks, computer processing power, and specialized corporate and user applications[3].

Cloud based services and service providers are being evolved which has resulted in a new business trend based on cloud technology [4]. The cloud computing is shown in figure. With the introduction of numerous clouds based services and geographically dispersed cloud service providers, sensitive information of different entities are normally stored in remote servers and locations with the possibilities of being exposed to unwanted parties in situations where the cloud servers storing this information are compromised.



Service Models

- **Software as a Service (SaaS):** Consumers purchase the capability to access and use an application or service that is hosted in the cloud. A standard example of this is Salesforce.com, where needed information for the communication between the consumer and the service is hosted a piece of service in the cloud.
- **Platform as a Service (PaaS):** Consumers obtain access to the platforms; facilitate them to organize their own software and applications in the cloud. The operating systems and network access are not handled by the consumer, and there might be restraints as to which applications can be organized [5].
- **Infrastructure as a Service (IaaS):** It is one of the three fundamental service models of cloud computing alongside Platform as a Service (PaaS) and Software as a Service (SaaS). As with all cloud computing services it provides access to computing resource in a virtualized environment, "the Cloud", across a public connection, usually the internet [6]. In the case of IaaS the computing resource provided is specifically that of virtualized hardware, in other words, computing infrastructure.

Security Concerns in Cloud computing

There are many security issues for cloud computing as it includes a lot of technologies together with virtualization, resource distribution, fractional administration, cloud networks, database, Operating systems, concurrency control and memory management. For instance, security in cloud network that interconnects to the systems in a cloud has to be protected. Virtualization model in cloud computing results in some security concerns [7] and mapping the virtual machine to the physical machine has to be carried out securely. Concurrency control involves encrypting the data as well as ensuring that appropriate policies are enforced for data sharing. Resource distribution and memory management algorithm have to be secured. Cloud permits attaining the power of computing which beats their own physical domain. It leads to numerous security problems [8].

Barriers in storing image datas in Cloud

In cloud computing service environments [9], there are lots of security problems like: distributed image data processing, virtualization, serviceability, cryptography traffic-handling, authentication, access control and application security etc. Particularly, data access through different resources need access control model and user authentication for integrated control and management in cloud computing environments. Cloud computing security is a hot issue for research, its brightness, interestingness and detection produced an appeal for researchers to pursue this topic in specific [10]. Several security concerns evolved while weighing the benefits of using cloud computing over local resources. The most important risks established by the cloud are the data storage, legal and regulatory risks, confidentiality and secrecy, accessibility, reliability, computationally feasible, proper usage metering, internal and external attacks and abusing cloud's resources.

DaaS Hypervisor

When considering a DaaS software, there are a couple of things you need to observe. Initial, is the hypervisor, which provides the software platform that runs the virtual machines [11]. The second one is the cloud service provider that supplies and defends the cloud running said hypervisor. Hypervisors be different in their capabilities; cloud providers differ in their offerings [12]. Currently, there are three major DaaS providers:

1. VMware Horizon Air
2. Amazon WorkSpaces
3. Citrix XenDesktop

Adopts DaaS Model

Desktop as a Service provides a useful solution that can bring greater flexibility, ease of administration and cost savings to organizations. Nowadays digital form of storing is adopted and replaced the traditional storage. Storing them on-site is not an efficient solution for current and future trend because of issues such as scalability and interoperability [13]. Cloud technology provides an attractive solution by providing lower cost, good scalability and moreover fault tolerant method. Even though cloud technology promises many such provisions, there are many dangerous issues to be considered like security, privacy, authentication, authorization which has to be overcome to enjoy the full benefits of the cloud technology. Authorized persons, those who are certified by the agencies should have access for viewing and processing it. An innovative technology / system are proposed for storing the images securely, by providing security and authentication [14].

DaaS propose a virtual desktop infrastructure (VDI) that is hosted by a third-party cloud service provider and is usually based on a monthly subscription fee model. DaaS employ a multi-tenancy architecture, which means that a single request of a function is served to many users, referred to as "tenants." The service provider is dependable for administration the cloud and the underlying infrastructure, and the level of service can vary depending on company needs [15]. Some companies may hope to have more control over their personal security.

Conclusion

Cloud computing by itself is in developing stage and hence the security suggestions in it are not complete. Adopts DaaS model is that clients can access their data and applications from nearly any device, anyplace. It also provides enlarged data security, easier platform migration, enhanced disaster recovery, and new desktop provisioning in minutes instead of hours. DaaS also has the capability to help ease compliance issues and give way cost reductions for many organizations.

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