Cloud Computing Architecture, Security issues: A Review

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***Abstract*- The term cloud computing seems to originate from computer network diagrams that represent the internet as a cloud. While cloud computing services have numerous potential benefits, there are also potentially significant privacy and security considerations that should be accounted for before collecting, processing, sharing, or storing institutional or personal data in the cloud. In this paper we have discussed clod computing layers architecture and security issues. We have studied related work to security and compared it.**

***Index Terms*- Cloud computing; Architecture; security in cloud computing**

I. INTRODUCTION

Cloud computing, also known as on-demand computing, is a kind of Internet-based computing that provides shared processing resources and data to computers and other devices on demand. It is a model for enabling ubiquitous, on-demand access to a shared pool of configurable computing resources. Cloud computing is 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[1]. Within a cloud structured processing basis, these possessions will be typically throughout in someone else's premise or maybe system and also got a chance to look at remotely via cloud clients [6]. Cloud computing could possibly be a great development in which employs online and also focal remote hosting space look out to maintain your data and also purposes [7] [8]. Cloud computing permit customers and therefore agencies to utilize applications while not formation and also entry their unique papers virtually at any pc together with world-wide-web entry. This particular development permit regarding much more useful computing by means of integrative files stockpiling, course of action and also files measure [9] [10]. A particular situation of cloud computing will be Bing electronic mail, Google mail, or maybe Hotmail and so forth. Almost all you wish it's essentially a new world-wide-web connection and you'll contain the ability to begin conveying e-mail. This standard server and therefore e-mail management encoding structure will be all on the cloud (web) which is entirely overseen because of the cloud management supplier Bing, Yahoo and Google and so forth this buyer receives the chance to utilize package deal by itself and also have fun with this preferences [11].

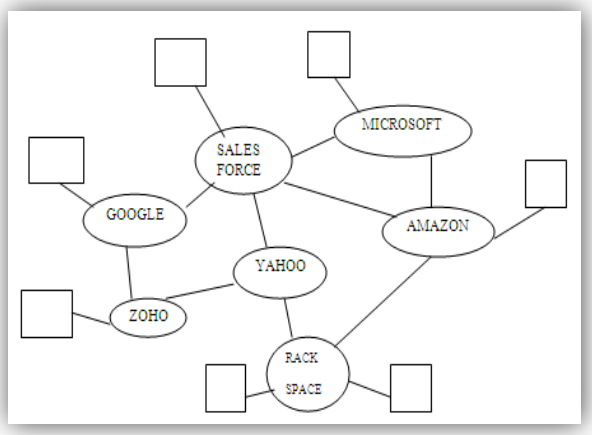

Figure 1.Cloud Computing Environment

Cloud computing will be hosed in 3 sections: "application" "storage" and also "connectivity"[3]. Every phase survives up around targets regarding certainly innovative purpose as well as gives distinct stock regarding agencies and also individuals about the entire world. With June 2011, a survey guided by means of V1 identified in which 90 certainly one of senior citizen IT authorities truly don't identify precisely what cloud computing will be and also

fundamental component of senior citizen cash authorities region entity clear through the beginning, which well-lit the youthful way of the modernization. With September 2011,

II. CLOUD COMPUTING LAYERS ARCHITECTURE

Cloud computing might be a basic time period no matter what which includes giving published services over the web. In the layers architecture of Cloud computing, cloud service providers into three categories [17]:

i. Platform-as-a-Service (PaaS),
ii. Infrastructure-as-a-Service (IaaS),
iii. Software-as-a-Service (SaaS).

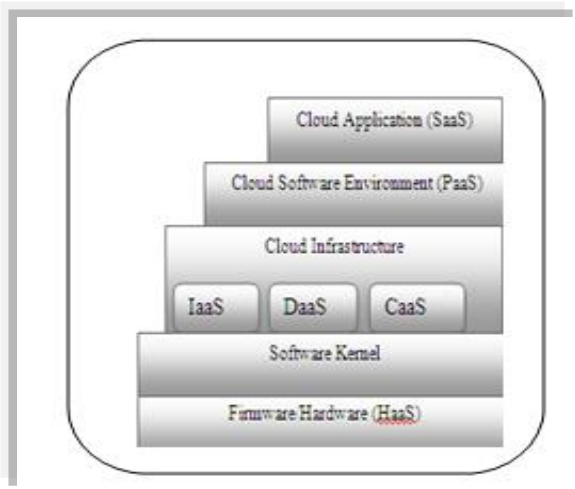

Figure 2: Five layered structure of Cloud Computing

A. Iaas Service

Infrastructure as a Service could be a provision model during which a company outsources the instrumentation accustomed maintenance processes, composed with stowage, hardware, servers and networking parts. The service merchant owns the instrumentation and is liable for housing, running and maintaining it [3] [4]. The shopper usually pays on a per-use basis. IaaS atmosphere generally source additional assets as being a virtual-machine hard disk drive image selection, raw data block stowage, along with file or maybe enterprise stowage, load balancers, virtual native space networks (VLANs), firewalls, IP addresses, and software package bundles. IaaS-cloud merchants provide these resources on-demand [10] from their massive pools installed in information centers. For wide-area connectivity, customers will use either the web or carrier clouds (dedicated virtual non-public networks) [5].

B. Paas Service

In the PaaS models, cloud providers convey a computing platform, normally including working framework, programming dialect execution environment, database, and web server. Application engineers can create and run their product arrangements on a cloud stage without the expense and unpredictability of purchasing and dealing with the hidden equipment and programming layers [18]. With some PaaS offers like Microsoft Azure and Google App Engine, the basic PC and capacity assets scale consequently to match application request so that the cloud client does not need to apportion resources yourself. The recent has likewise been proposed by a Framework modeling meaning to real-time in cloud environments.

C. Saas Service

In the business model using software as a service (SaaS), purchasers are conveyed induction to application programming and databases. Cloud suppliers deal with the base and stages that run the applications. SaaS is now and again said as "on-interest programming" and is generally valued on a pay-every utilization premise. SaaS shippers all in all worth applications utilizing a membership expense [13].

In the SaaS model, cloud providers install and operate application software in the cloud and cloud users access the software from cloud clients. Cloud users do not manage the cloud infrastructure and platform where the application runs. This eliminates the need to install and run the application on the cloud user's personal pcs, which make simpler to do preservation and backing. Cloud applications are different from other applications in their scalability—which can be achieved by cloning tasks onto multiple virtual machines at runtime to meet changing work request. Burden balancers allocate the job over the set of virtual machineries [13]. This procedure is quite crystal clear to the cloud consumer, who usually sees solitary a single access point. To make available rooms regarding numerous cloud users, cloud purposes can be versatile, which is, virtually any machine will serve several cloud individual corporation.

This calculating design regarding SaaS purposes is normally a new month to month or maybe annual

level charges each and every consumer, thus cost will be adjustable and also versatile when buyers are usually bundled or maybe uprooted at all time [17].
Defenders state SaaS makes it possible for a business the possibility to decrease IT operational charges by means of outsourcing apparatus and also encoding assistance and also assistance towards cloud service provider. This particular enables this company to reallocate IT procedures costs far from equipment/programming spending and also work force costs, to meeting unique objectives. Furthermore, together with purposes facilitated midway, redesigns can be cleared minus the requirement for buyers to set up brand-new encoding [14]. Sole disadvantage of SaaS will be which the customers' info are usually put away on the cloud supplier's server. Consequently, there can be unapproved having access to the data. Hence, clients are progressively embracing keen outsider key administration frameworks to help secure their information.

III . SECURITY IN CLOUD COMPUTING

Cloud computing comes with numerous possibilities and challenges simultaneously. Of the challenges, security is considered to be a critical barrier for cloud computing in its path to success (Khorshed, Ali & Wasimi, 2012). The security challenges for cloud computing approach are somewhat dynamic and vast. Security assurance in the Cloud Service is a major challenge for the Providers, as it's the biggest concern for the Consumers to opt for the service. The Security can be administered in the Cloud at various levels and for several types of attacks. The threats and the attacks on the Cloud service can be common prevailing attacks in the internet or can be cloud specific.

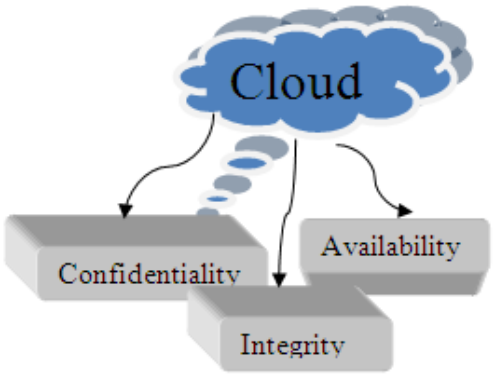

Fig 3: Basic security traits

There are a number of security risks

- Loss of governance
- Responsibility ambiguity
- Isolation failure
- Compliance and legal risks
- Handling of security incidents
- Application Protection
- Data protection
- Service unavailability

3.1 Related work

Several studies have been carried out regarding security issues in cloud computing from several points of view.
Mohamed Al Morsy, et.al have gives a detailed analysis of the cloud security problem, they have investigated the problem from the cloud architecture perspective, the cloud offered characteristics perspective, the cloud stakeholders' perspective, and the cloud service delivery models perspective. Based on this analysis we derive a detailed specification of the cloud security problem and key features that should be covered by any proposed security solution [2].
Krešimir Popović et.al discussed high level security concerns in the cloud computing model such as data integrity, payment and privacy of sensitive information [12].
Cong Wang et.al proposed a scheme of integration of storage correctness insurance and data error localization. The proposed scheme is highly efficient and resilient against Byzantine failure, malicious data modification attack, and even server colluding attacks [15]

R. Velumadhava Rao et.al have highlight data related security challenges in cloud based environment and solutions to overcome [16].

3.2 Comparative Analysis

Author Name	**Year of publication**	**Advantages**	**Disadvantages**
Mohamed Al Morsy, et.al	*2010*.	Block the existing security holes	Security management is very critical to control and manage.
Cong Wang et.al		Their scheme achieves the integration of storage correctness insurance and data error localization	Do not overcome the problem of fine-grained data error localization.
R. Velumadhava Rao et.al	2015	Data security challenges and solutions are provided	secure data access in cloud is not provided
Krešimir Popović et.al	2016	security in cloud computing was elaborated in a way that covers security issues and challenges, security standards and security management models.	

IV. CONCLUSION AND FUTURE WORK

Cloud computing by itself is in evolving stage and hence the security implications in it aren't complete. It is emerging as the various organizations that are developing cloud services are evolving. We have discuss the architecture and various security issues in cloud computing. And also compare the work done on security issues by the researchers. In future the work can be done on disadvantages discussed in comparative analysis.

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