User Authentication in Cloud: A New Approach

Sayali M. Jawake[1] Vasundhara V. Bhele[2] Snehal P. Deulkar[3] Mayuri P. Kawalkar[4] Sonal R.Jathe[5]
[1,2,3,4,5]Assistant Professor
[1,2,3,4,5]Department of Computer Science and Engineering
[1,2,3,4,5]JDIET, India

Abstract— Cloud Computing has been imagined as the next-generation architecture of IT Enterprise. In cloud computing application software and databases are moving to the centralized large data centers. This mechanism brings about many new challenges, which have not been well understood. Security and protecting concerns, however, are among the top concerns standing in the way of wider adoption of cloud. In cloud computing the main concern is to provide the security to end user to protect files or data from unauthorized user. Security is the main intention of any technology through which unauthorized intruder can't access your file or data in cloud. In this paper we analyzed a three method preserving cloud computing privacy architecture, authentication architecture, Cloud information accountability (CIA) system. The proposed model increases the security at the security access point level of cloud computing and status monitor system with data log mechanism. This system ensures the user by keeping user's data privacy giving access policies. And log mechanism contain the user policy according to that user has benefit to access services and data in cloud.

Key words: Authentication, Security, Privacy, Cloud Services

I. INTRODUCTION

Cloud computing has emerged from grid computing [1], and it is a recent technological trend that aims to provide services and information through the Internet according to demand and the payment is made according to what it is used. Cloud computing realizes the management of a resource pool automatically and dynamically through software and hardware. The computational model in the Clouds aims to provide three benefits [2]. The first is related to cost reduction since it is not necessary acquire new machines and maintaining them. Second, there is a great flexibility to add and replace computational resources in terms of hardware and software in a manner which met the needs of users. Last, the users do not need to know where the services and resources are localized physically when they want to access them. Cloud services are offered in three models. These are known as the SPI Models which are derived from Software, Platform and Infrastructure as a service.

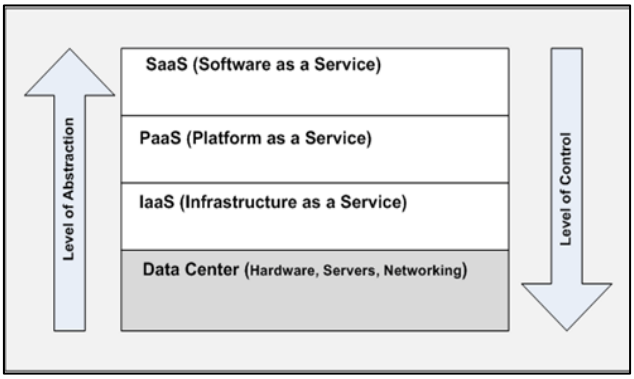

Fig. 1: Cloud Computing Services Architecture

The software as a service (Software as a Service - SaaS) the client is offered with applications running on a cloud infrastructure. They can be accessed by multiple devices browser. The consumer does not need to bother on how to manage or control the infrastructure (network, server, OS, storage, etc.).The platform as a service (Platform as a Service - PaaS) offers an infrastructure with a high level of integration to test implementations and applications in the cloud. It is through a PaaS that operating systems, programming languages and development environments are provided to test applications. Infrastructure as a service (Infrastructure as a Service - IaaS) offers the consumer with processing, storage, networks and several basic computational resources so that the consumer is able to deploy and run the software he wants. Cloud computing has some advantages and some challenges. One advantage is that services are quick, simple and their cost is inexpensive. They have the characteristic resiliency in that resources are occupied and liberated according to demand. The amount of available resources is more than consumers have in Indeed. Consumers do not need to worry about processing power, energy use, or license systems. Cloud computing has some challenges such as security, reliability, availability, privacy, interoperability and service level agreement.

II. BACKGROUND

Much research has been done on security and privacy of user in cloud computing environment. Model for hiding the presences of individual from shared database. Ambiguity hides the presences of individual. A client based privacy manager for cloud computing. Privacy in the cloud risk to privacy and confidentiality from cloud computing. proposed a cloud trust module in security aware cloud[1].

Provable data possession at untrusted stores. Accountability mechanisms to address privacy concerns of end users and then develop a privacy manager .A distributed approach to accountability are from. An agent-based system specific to grid computing. Cloud security and privacy: an enterprise perspective on risks and compliance. Accountability as a way forward for privacy protection in the cloud. Preventing information leakage from indexing in the cloud. Promoting distributed accountability in the cloud [2].

Security in cloud based e-learning computing given in. The cloud computing benefits for e-learning solutions. Seven deadly threats and vulnerabilities in cloud computing. Security and high availability in cloud computing environment [3]. A frame work comp rising of different techniques and specialized procedure res is proposed that can efficiently protect the data from the beginning to the end, i.e., from the owner to the cloud and then to the user[4]. It first identify the data mining based privacy risks on cloud data and propose a distributed architecture to eliminate the risks[5]. It is discuss about some of the techniques that were implemented to protect data and propose architecture to

protect data in cloud. This architecture was developed to store data in cloud in encrypted data format using cryptography technique which is based on blockcipher[6]. The Effective Privacy Protection Scheme (EPPS) is proposed to provide the appropriate privacy protection which is satisfying the user demand privacy requirement and maintaining system performance simultaneously [7]. SasS protocol gives the user a chance to define the security of their data, by leaving the option of dividing the data into chunks[8]. Propose a new privacy preserving authenticated access control scheme for securing data in clouds[9].It introduces a detailed analysis of the cloud computing security issues and challenges focusing on the cloud computing types and the service delivery types. It mainly proposes the core concept of secured cloud computing [10].

This paper is organized as follows: in section III provides a previous work done section IV describes the existing methodology. Sections V analysis and discussion section VI explain the proposed methodology. Section VII gives details about the possible outcome of proposed methodology. Finally, Section VIII provides conclusion and IX gives some future lines.

III. PREVIOUS WORK DONE

Conventional access control approaches developed for closed domains such as databases and operating systems, or approaches utilizing a centralized server in distributed environments, are not suitable, due to the following features characterizing cloud environments. In the first place, information dealing can be outsourced by the direct cloud service provider (CSP) to other entities in the cloud and theses entities can also delegate the tasks to others, and so on. Second, elements are allowed to join and leave the cloud in a flexible manner. Therefore, data handling in the cloud goes through a complex and dynamic hierarchical service chain which does not exist in conventional environments [2].

A typical way to deal with to protect user data is that user data is encrypted before it is stored. In a cloud computing environment, a user's data can also be stored additional encryption, but if the storage and encryption of a given user's data is performed by the same service provider, the service provider's internal staff (e.g., system administrators and authorized staff) can use their decryption keys and internal access privileges to access user data[3]. To prevent the access of client private data an effective technique for security is required.

IV. EXISTING METHODOLOGIES

The proposed display of Preserving cloud computing Privacy (PccP) has a three - layered architecture following are layers in this architecture.

- Consumer layer
- Address mapping layer and
- Privacy preserving layer.

Any request for service by the cloud user will have to prepared through these three layers and then accordingly cloud user request is serviced. This architecture uses unique service dependent identity (USID) and Match logic. The main functionality of Match logic is to guarantee that the duplication of created identities is dodhed and that the USID's once generated are prevented from being allocated to any new user.

Proposed a novel approach [2], namely Cloud Information Accountability (CIA) framework, based on the notion of information accountability. Unlike privacy protection technologies which are built on the hide-it-or-lose-it perspective, information accountability focuses on keeping the data usage transparent and track able. Proposed CIA framework provides end-to-end accountability in a highly distributed fashion. By means of the CIA, data owners can track not only whether or not the service-level agreements are being honoured, but also enforce access and usage control rules as needed. Associated with the accountability feature, system contains two distinct modes for auditing: push mode and pull mode. The push mode refers to logs being periodically sent to the data owner or stake holder while the pull mode refers to an alternative approach whereby the user can retrieve the logs as needed. This method provide a security when data is transfer but not at the storage level.

The authentication architecture [3] provides access security to data. If a user want to access the data if it belongs to protection then user have to register to the authentication cycle itself and after that user name and password it check if it match then user access the services or data. If it doesn't match then user not allows accessing their account. If user is already registered need not require further registration. But password and username not provide a strong access security so that a new method is required which provide a data security and access security with strong password.

V. ANALYSIS AND DISCUSSION

Match Logic is that privacy preserved and service dependent user identities are being produced [1]. The Match logic mechanism also ensures that any privacy leaked identities are prevented from being allocated to the users. Furthermore, the pool of privacy preserved identities as well as the privacy leaked identities is updated. At long last the currently generated privacy preserved identity is allocated, thereby enabling the user to access cloud services.

Related with the accountability feature, CIA structure contains two distinct modes for auditing: push mode and pull mode. The push mode alludes to logs being occasionally sent to the data owner or stake holder while the pull mode alludes to an alternative approach whereby the user can retrieve the logs as required [2]. The logger is the component which is powerfully coupled with the user's data, so that it is downloaded when the information are gotten to, and is duplicated at whatever point the information are replicated. It handles a specific example or duplicate of the client's information and is in charge of logging access to that occasion or copy. The time to create a log file increments linearly with the size of the log file. But it not covers issues of data storage security which are a complementary aspect of the privacy issues. The attacks may steal the jar file in which logging policies are defined. Authentication cycle offer way to protect their client's data, especially to prevent the data from disclosure by unapproved insiders. User-name and password does conflict then client is not permitted to get to their record [3].

And furthermore for some situation if hacker needs to hack the account of a specific user then in that case hacker gets only the fake database of the account is there to access

the account by hitting the user-name and password, if limit become cross then hacker get's the fake database. It is very important in shared environment to properly and securely authenticate system users and administrators, and provide them with access to only the resources they need to do their jobs or the resources that they own within the system. It is also very important in a cloud environment to know who is doing what within the system, when they did it, and what exactly they did. Separating duties and enforcing least privilege applies for both the cloud provider and the customer. The cloud provider should ensure that only authorized administrators have access to resources. They should also provide the customer with a mechanism for giving internal administrators access to essential resources. Text-based authentication is vulnerable to more difficult attacks, such as Brute force attacks and packet sniffing. With Brute force attacks, an intruder tries to guess the users password, or uses a password hash file. Alternatively, an intruder can use easily downloaded packet sniffing technologies such as Ethereal (Akula).

VI. PROPOSED METHODOLOGY

Authentication is quite challenging and troublesome in the case of Cloud Computing. In many applications, authentication is achieved through username and password only. With password breaking tools available free online, hackers take few minutes to identify the user's password [3]. Current validation schemes suffer from many weaknesses. Textual passwords are widely used; however users tend to choose meaningful words from dictionaries. This makes textual passwords simple to break and vulnerable to dictionary or brute force attacks. Smart cards or tokens can be lost or are prone to fraud. To shield client against this threat, a new authentication scheme is required. Proposed model may provide a strong authentication process so that only authorized user can access the services. Our solution regards expanding security at the services access point level of cloud computing and also provide a status monitoring system with logger mechanism. The mechanism strongly coupled with user data and status monitoring system monitors access log of users. At that point all these data is exchange with the request to the services according to that user can use the services of cloud.

VII. CONCLUSION

Security features provided by service providers in a cloud computing is not entirely trustful. Such type of paper has presented some works on existing access control, security and privacy in the cloud computing environment. Data deemed confidential wants to be protected, thus providers seeks technological innovations that guarantees protection and privacy of information users. This type of work has determined on the existing access control mechanisms in cloud computing environments and proposed an authentication system and status monitoring system with log mechanism. Such type of framework guarantees the user by keeping user's data privacy giving access policies.

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