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Observing Hybrid Authentication System in Cloud Computing

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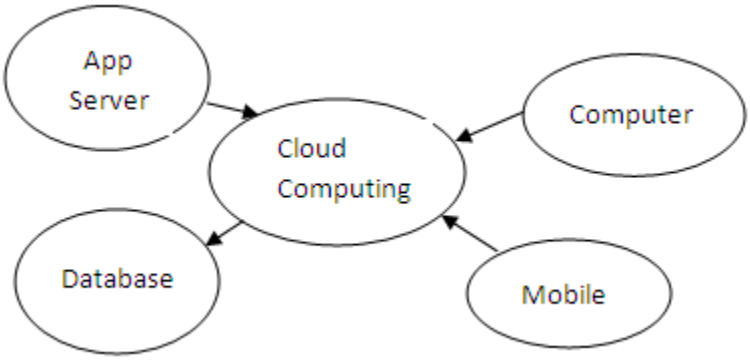
Abstract: Now days, Cloud Computing has been involved in every field. Cloud Computing provide computing services- Server, software, storage, data mining, networking and more over the internet i.e. "Cloud". All these services are available on demand and you pay for it as similar to you are billed for electricity or water or telephone. Cloud computing is the cheapest way to use the services, hardware or a licensing new software and it is high performance scalability, accessibility as well as availability. A primary factor of the user is data protection and privacy which is done by cloud computing. Cloud computing has a major issue of user authentication. Due to lack of security, privacy and protection of information are not more reliable in the cloud computing. In this paper we introduce the user authentication on cloud computing system.
Keywords: Cloud computing, authentication, Hybrid.

1. Introduction:

Cloud computing is based on internet computing services that shared all computer resources and data to computer and other devices of computer on demand. Cloud provide a service on the basis of "pay as you go" model, it works as like as you pay for electricity or telephone usage at a home. [8] Cloud is an environment of the hardware and software resources that provide the services as user's requirement over the internet at a minimal cost. [9] Cloud computing environment provides two basic types of functions: computing and data storage. In the cloud computing environment, User of cloud services, they access to their data and finish their task through the cloud computing over the internet and they don't need to access any extra information which is not required in his business. User can pay only for such using data. At the time of using service user of cloud it is not even know that where the data is stored and which machines will execute the computing task. Data storage, data protection and security are the primary factors for gaining user's trust and making the cloud technology successfully used.



Cloud Computing

2) **Category of Cloud computing**

2.1) Public Cloud:- In public cloud, all the hardware and software resources are available to the general public of the cloud. All the services are operated by the large organization, government and a combination of both. The data center is off-premises in public cloud. The benefit of the public cloud is its flexibility and cheapest cost but there is also weak point i.e. vulnerable to the various attack.

2.2) **Private Cloud:**- In private cloud, Organization or Government has own cloud. Cloud infrastructures are shared by one organization or users who belong to the organization that has own cloud. It physically located on the company's on-site data center. It exist on or off premises. In Private cloud, data security and its protection are on highly based i.e. it is more popular cloud for storing the data of the organization and it is also flexible cloud.

2.3) **Community Cloud:**-[2] The cloud infrastructure is provided for particular use by a specific community of consumers from organization. It is operated by organization, third party or a combination of them. As comparative to public cloud, it is costlier but highly secure then public cloud.

2.4) **Hybrid Cloud:**- The cloud infrastructure is a combination of two or more cloud infrastructure i.e. private , public or community cloud. Hybrid cloud is bound or depends on the others cloud infrastructure and proprietary technology that enables data and resources.

3) Functions of cloud computing

3.1) Software as a Service (SaaS)- [2] SaaS is the top application of cloud computing. It provides a software services according to the user requirement instead of paying for an application. SaaS also referred as "on demand software" in which data and software are centrally present in cloud. In SaaS, cloud provider manages all the resources of the computer [3]with the appropriate service agreement, give the assurance the availability and the security of the data as well. User can access the data from internet connected computer because data is stored in cloud. When the app data is stored in cloud, no data is lost if a user's computer is fails. Example is Google App.

3.2) **Platform as a Service (PaaS)**- PaaS is the middle application of cloud computing. PaaS service provide the user a developed platform to design their application. PaaS provides an environment to design [4]to support the complete web application lifecycle, building, testing, deploying, managing and updating. The user is responsible for managing and installing the application that it is utilized. Example- Google App engine.

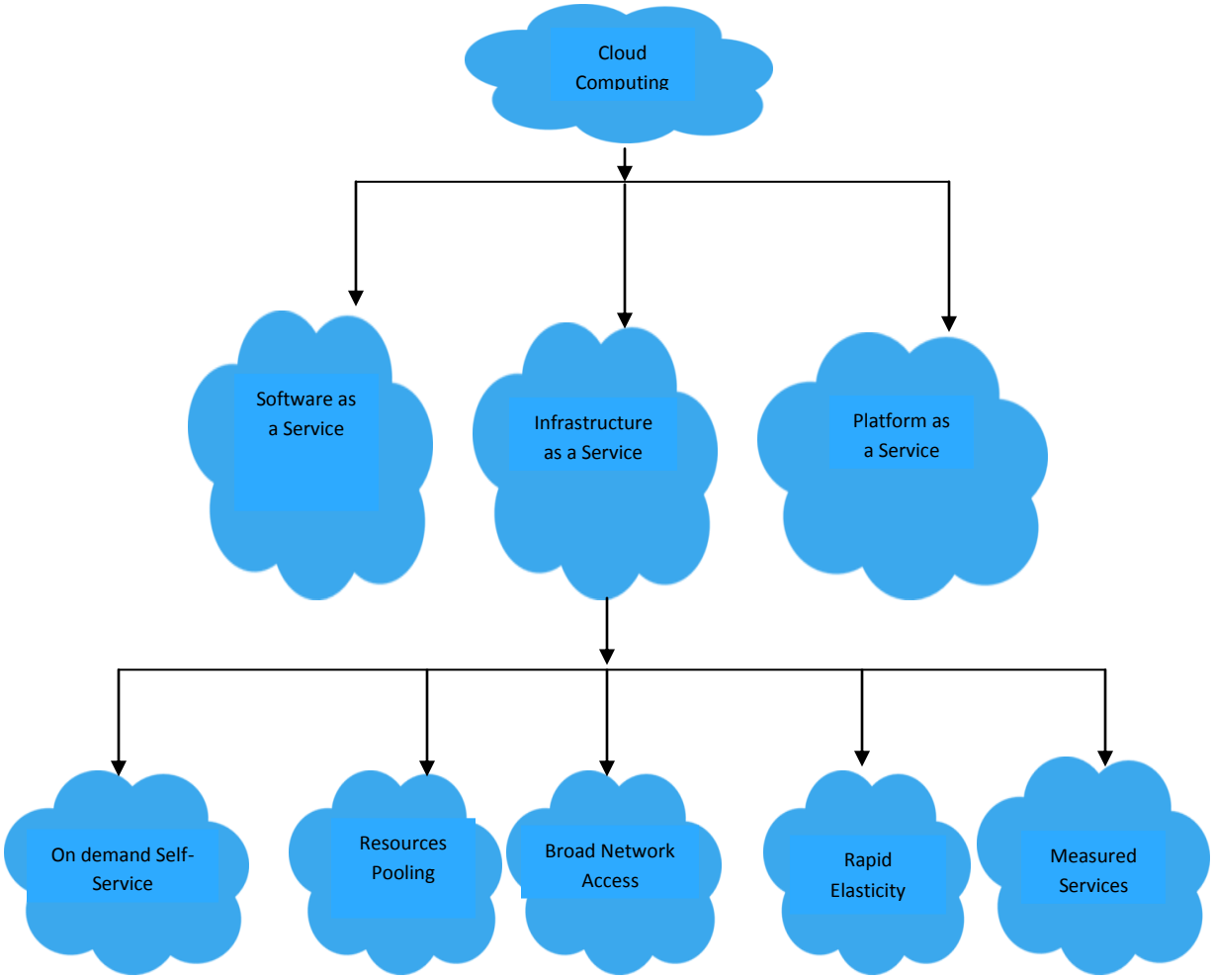
3.3) **Infrastructure as a Service (IaaS)**- IaaS as Service provides resources such as storage, memory, infrastructure of servers and network device over the internet. IaaS helps to reduce the cost and complexity of buying and managing your own physical servers and other datacenter infrastructure. User pay a rent a particular for as long as user's requirement. In IaaS, with the appropriate service agreement, a cloud service provide give a better security to the application and data better then user can attain in house. Diagram of Cloud Computing Application.

Related Work:

Nowadays, there are lots of threats regarding of hacking user's personal or organization information. More of researches on security issues in cloud computing are carried out.

Jivanadham et al. [11](Jivanadham, et al, 2013) explains the basic concepts of cloud computing, security issues and also proposed an integrated authentication mechanism called the Cloud Cognitive Authenticator (CCA). CCA is an API, integrating bio-signals, one round Zero Knowledge Protocol (ZKP) for authentication and Rijndael algorithm in Advance Encryption Standard (AES). To enhance security in

cloud, CCA has proposed four procedures, providing two levels of authentication as well as encrypting/decrypting the user ID.



Donald et al. [11] (Donald, et al, 2014) proposed a model for trusted computing and solve the identity theft in the cloud and it was simulated in the .Net environment. The evaluation of the proposed model occurs in three ways: security analyzing, simulating, and BLP confidential. The model involves six steps on the Open ID exchange of data flow. The strength of the proposed model is evaluated against phishing attacks and it results in an optimal solution.

4) Authentication:

Cloud Computing has provided many exciting services and features like flexibility, reliability, unlimited storage, portability and the quick processing power but cloud security is still a big issue. Authentication is the feature of security which secure the data or information of the user. Cloud service provider(CSP) gives the facility to the user to authenticate. In this user authentication model, has two phases. First is registration and second is authentication phase.

4.1) **Registration Phase :-**

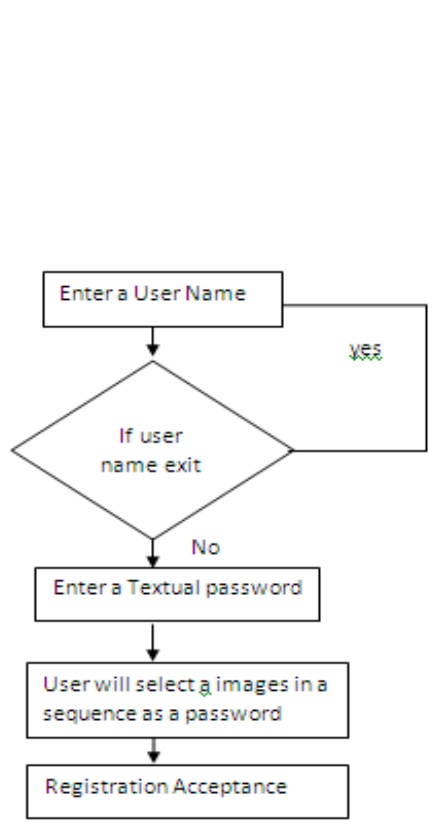
In the registration phase, user has to first select user name and textual password. Then select the pictures in the even number (minimum six) which are giving by the cloud provider. These pictures will be stored as a password in the same sequence in which user has selected. This Sequence of images acts as a secure

user personal information or data. It is suggested that user selects the password carefully. After selecting the password see it sensibly to remember it

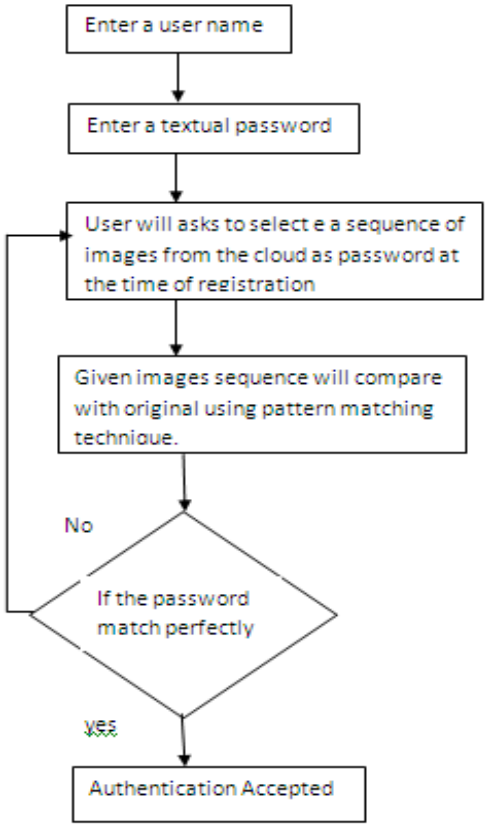
Algorithm of Registration:
a) Enter Username (Un) (If exists Enter New Username)
{Un: It is a set of characters.}
b) Now user selects the desired text password (Tp).
{Tp: It is a set alphabets, characters and etc.}
c) Select a pictures from cloud server (minimum six) (Pp).
{Pp is selected in sequence making graphics password.}
d) Registration complete.

4.2) **Authentication Phase**:-
In the authentication phase, the user has to give user name and textual password, then select the picture in the same sequence which is registered in the registration phase.

Algorithm of Authentication:-
a) Enter user name.(Un) {Un: username given during registration.}
b) Enters the text password 'User' (Tp) {Tp: Text password selected during registration.}
c) Select the pictures password(Pp) {Pp select in the same sequence as registered.}
d) If successful then
e) Authentication complete



Block Diagram of Registration phase



Block Diagram of Authentication Phase

Conclusion:-

Cloud computing is increased day by day in our life. Cloud service provider(CSP) gives infrastructure of hardware and software over the internet to the user. But somewhere, the user has the fear of losing data, fearing of hacking of data or other kind of fraud. In this paper , security feature is provided for user authentication in cloud computing.

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