

Comparison of UPS with OTP methods in Cloud Computing

Kapila Purohit, Anurag Rana

Research Scholar, CSE Department, Arni University, H.P, India
Assistant Professor, Department, Arni University, H.P, India

ABSTRACT

Cloud computing is the new trending model used for computing in which the internet is used for communicating and storing the data. In Cloud Computing, security only by Authentications, UPS, Anti-Malware, and Firewalls etc are not sufficient in the dynamic and evolving nature of threats. So needs an extra dimension, which will augment these security mechanisms to work in more reactive and pro-active approach. OTP generation system is a program that registers and provides detailed information about the user behavior by profiling its behavior activities. So, profiling of user's character through evaluating its usage patterns helps a security mechanism to take appropriate control measures based on the profile history of the user. So in this paper we have compared both techniques according to their features available.

Keyword: - *Cloud Computing, Security in Cloud, OTP*

1. Introduction

Cloud Computing is an evolving technology. The concept of Cloud Computing dates back as early as 1961, when Professor John McCarthy stated that computer time-sharing technology might lead to a future where computing power and even specific applications might be sold through a utility-type business model. This idea of utility-type business model became very popular in the late 1960s, but by the mid-1970s the idea faded away when it became clear that the IT-related technologies of the day were unable to sustain such a futuristic computing model [1]. In the past decades, the world of computation has experienced some dramatic changes from stand alone application to client-server architecture and from distributed to service oriented architecture. All of these transformations aimed to make the software easier to use and improve business process execution efficiency [2].

Another definition to the already saturated list of definitions for Cloud Computing: A large-scale distributed computing paradigm that is driven by economies of scale, in which a pool of dynamically-scalable, abstracted virtualized, managed computing power, storage, platforms, and services are delivered on demand to external customers over the Internet. The Key points in this definition are as: the Cloud Computing is a specialized distributed computing paradigm; it differs from traditional ones in that 1) it is extremely scalable, 2) can be encapsulated as an abstract entity that delivers different levels of services to customers outside the Cloud, 3) it is driven by economies of scale [11], and 4) the services can be dynamically configured (via virtualization or other approaches) and delivered on demand [12].

1.1 Security Issues

IDC (International Data Corporation) enterprise panel report in August 2008 [1] highlights the problems facing during Cloud Computing Platform development and depicts how the domain of security in Cloud Computing dominates all other problems with the highest percentage of 87.5%. That is the reason, why research in Cloud Computing Security becomes a hot spot area. Some of the main areas identified as the threats to Cloud Computing security are as [2]:

- **Threats to Cloud User:** The Cloud user may face the following threats:
- **Threat of data leaks:** Service-provider accesses the user's data very first instead of the intended user, which can pose the threat of data leaks.

- **Threat of management right loss:** Because of the non- clarity of actual location of the service or data, it is difficult for maintain compliance between the jurisdiction of different nations and users should understand this risk.
- **Threat of unintended data mixture and threat of data location change virtualization:** Cloud Computing has flexible sharing nature. So, users' data are located on a shared hardware, which posses the risk of data mixture and location virtualization.
- **Challenge of data recovery and restoration:** Data should be erased completely to ensure data security in Cloud environments, when requested.

1.2 Technologies behind Cloud Computing

Cloud Computing is a new computing model in one sense, but at the same time, composition of older computing models in othersense. Cloud Computing depicts as a new computing model because it serves the purpose for one-stop with cost efficient like model, whereas for composition of older technologies, Cloud Computing comes from Distributed computing, Grid computing, Parallel computing, Virtualization technology, Utility Computing and other computing technologies [15]. Cloud refers to a network of provided resource, in which all resources are infinitely scalable and used as a utility [16] means; user can get services according to his needs [17].

- **Distributed Computing** is a field of computer science that studies distributed systems. A software system in which components located on networked computers communicate and coordinate their actions by passing messages represents distributed systems. The components of the distributed system interact with each other in order to achieve a common goal [18].
- **Grid Computing** aims to enable resource sharing and coordinated problem solving in multi-institutional dynamic virtual organizations [19][20]. Some key features to this definition are as: Grids provide a distributed computing paradigm or infrastructure that spans across multiple Virtual Organizations (VO) where each VO can consist of either physically distributed institutions or logically related projects/groups. The goal of such a model is to enable federated resource sharing in dynamic, distributed environments [12].
- **Parallel computing** is a form of computation in which many calculations are carried out simultaneously [21], operating on the principle that large problems can often be divided into smaller ones, which are then solved concurrently (in parallel). Several different forms of parallel computing: bit-level, instruction level, data, and task parallelism. Parallel computers can be generally classified according to the level at which the hardware supports parallelism, with multi-core and multi-processor computers having multiple processing elements within a single machine, while clusters, MPPs, and grids use multiple computers to work on the same task. Specialized parallel computer architectures are sometimes used alongside traditional processors, for accelerating specific tasks [22].
- **Virtualization** is the creation of a virtual (rather than actual) version of resources, such as an operating system, a storage device, a server or network resources. There are three main areas of IT where virtualization is making head roads: server virtualization, storage virtualization and network virtualization [23].
- **Utility computing** is a service provisioning model in which a service provider makes computing resources and infrastructure management available to the customer as needed, and charges them for the usage rather than a flat rate [24]. The utility model is based on metering usage and constitutes a pay-as-you-go approach. Unlike subscription services, metered services are based on actual usage rates. For

example, an ISP may use a utility model, charging customers for connection minutes, though the subscription model is more common among ISPs operating in the United States. An interesting hybrid model on the Web, the metered subscription, allows subscribers to purchase access to content in metered portions, such as the number of pages viewed [25].

2. Comparison of User Profiling system and OTP Generation System

2.1 User Profiling System comprises of:

1. For Profiling User Character it is a layered approach.
2. Based on the possible user behaviors: Behavior models or Structural models.
3. Joint solution for detecting malicious users in Cloud.
4. Profile-aware protection system to take suitable action.

2.2 OTP Generation

During the investigation of the existing problem we came to the requirement of more efficient security mechanism in cloud. This is the One Time Password Mechanism which will help the different security feature to mitigate the problem of unsecured data on cloud. Moreover it is most acceptable mechanism nowadays in resolving different security issues in different fields.

Sub Problem1: Data that we store on cloud is not secure.

Sub Problem2: No secure mechanism is yet proposed to provide high level of security.

3. Conclusion

The protection of the confidential and data processed and generated during the computation is becoming the major security concern. In cloud computing, data protection is the most important security issue. This issue, will concern in which data is accessed and stored, audit requirements, compliance and notification requirements, issues involving the cost of data breach, and damage the brand value. OTP generation system is a program that registers and provides detailed information about the user behavior by profiling its behavior activities. So, profiling of user's character through evaluating its usage patterns helps a security mechanism to take appropriate control measures based on the profile history of the user. So in this paper we have compared both techniques according to their features available. Both are having some negative and some positive points in them but still OTP in point of security can be a reliable option for enhancing the security in a cloud.

4. REFERENCES

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