

A REVIEW ON SECURITY AND PRIVACY OF DATA IN MULTI CLOUD WITH DATA BACKUP AND DATA RECOVERY

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ABSTRACT— Cloud computing is important in IT industry. Cloud service has a widespread acceptance but the fear pertaining to security and privacy of these services still continue to be an open challenge. While talking about cloud security there are many aspects which one needs to consider such as trusted authentication, authorization, data security. There are different algorithms for data encryption like RSA, AES, DES, RC4, 3DES etc. These algorithms are broadly classified as being symmetric or asymmetric in nature. While creating a secure cloud there are faced too many challenges like data protection, loss of data etc. Many security services which are certain by secure cloud system. In that system hybrid cryptographic approach used which gives benefits of both symmetric and asymmetric encryption. That system is for single cloud and it was implemented on cloud sim framework. In cloud computing, data generated in electronic form are large in amount. To maintain this data efficiently, there is a necessity of data recovery services. This paper is about the reviews on data security and data backup/recovery in multi cloud.

Keywords—Single Cloud; Multi Cloud; Data Privact; Data Backup/Recovery; cloud Storage

I.

II. INTRODUCTION

Cloud computing has become a vital technology where Cloud services providers make available computing resources to their consumers to host their data or execute their computing Tasks. Cloud computing can be catalog into unusual service Distribute models such as Software as a Service, Platform as a Service, Infrastructure as a Service.[5] Today, Cloud Computing is itself a gigantic technology which is Surpassing all the previous technology of computing (like Cluster, grid, distributed etc.) of this competitive and challenging IT world. The need of cloud computing is increasing day by day as its advantages overcome the disadvantage of various early computing techniques.[8] The use of cloud computing has increased rapidly in many organizations.[1]

Dealing with “single cloud” providers is becoming less popular with customers due to potential problems such as service availability failure and the possibility that there are malicious insiders in the single cloud. In recent years, there has been a move towards “multi clouds”, “inter cloud” or “cloud-of-clouds”. [1] This paper focuses on the issues related to the data security aspect of cloud computing. As data and information will be shared with a third party, cloud computing users want to avoid an untrusted cloud provider This paper is also focus on multi cloud based data recovery.

III. LITERATURE REVIEW

A. Cloud Computing: Preliminary

Cloud computing is define as “a style of computing where massively scalable IT-enabled capabilities are delivered ‘as a service’ to external customers using Internet. [2] Cloud computing consist of three components such as infrastructure as a service (IaaS), platform as a service (PaaS), and software as a service (SaaS). [1]

B. Cloud Service Provider

Cloud service providers should ensure the security of their customers’ data and should be responsible if any security risk affects their customers’ service infrastructure. A cloud provider offers many services that can benefit its customers, such as fast access to their data from any location, scalability, pay-for-use, data storage, data recovery, protection against hackers, on-demand security controls, and use of the network and infrastructure facilities[1]

C. Security Concern in Cloud

Security in cloud plays an important role in creating a sense of belief and confidence between the customer and Cloud Service Provider (CSP). Since, the entire user data is stored, managed and processed at the cloud end thus it is the duty of the CSP to mitigate any kind of risks pertaining data security and privacy. Following are certain Cloud security which a CSP needs to keep in mind while dealing with user data [4];

- Data Protection

- Loss of Data
- Traffic Hijacking
- Isolation of Resources
- Malicious Insider

D. Moving From single to Multi Cloud

After all, we need to know what Multi cloud is. Clearly, it is a more complex system than a hybrid cloud, which is usually a combination private and public cloud. [6] The main purpose of shifting towards inter clouds is to improve whatever was offered in single cloud by distributing the reliability, trust and the security among multiple cloud providers. Multi-cloud add more clouds to the mix (i.e. possibly two or more public IaaS providers, a private PaaS, private use-based accounting, etc.) which aims at reducing the risk of service availability failure, exploitation of data, loss of privacy, and the possibility of malicious insiders in the single cloud.[6]

IV. PROPOSED WROK

Here in our system we take AES and RSA algorithm for encryption. Seed block algorithm is good for data backup and recovery service. Because it gives same size recovered file as well as original file. Our system architecture is shown in bellow fig. 1.

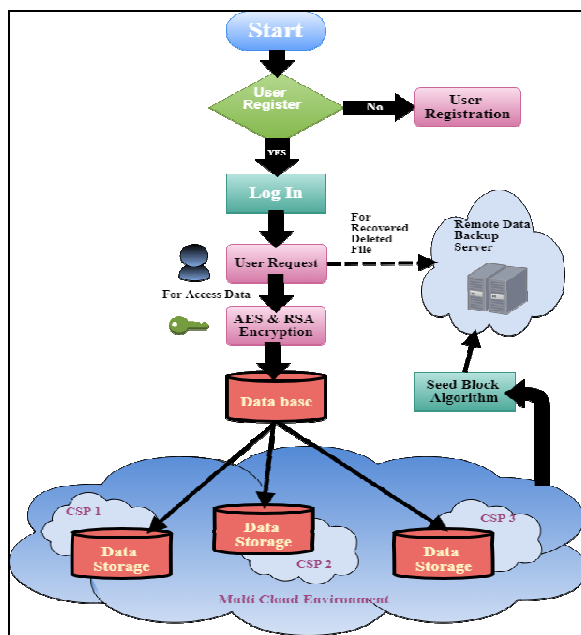


Fig. 1. System Architecture

A. Data Security

The prevalent Problem associated with Cloud Computing is the Cloud security and the appropriate Implementation of Cloud over the Network. With the help of different encryption algorithms, Users are able to enhance the data security of cloud computing. [10] There are many different algorithms for data security. Mainly two types of encryption algorithm: symmetric encryption and asymmetric encryption.

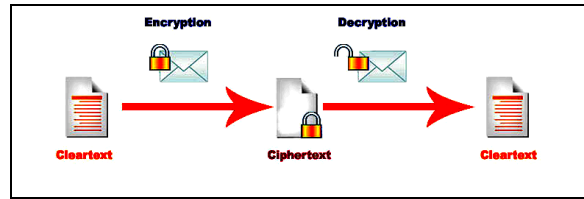


Fig. 2. Encryption/Decryption Process

N.Jayapandian [3] uses DES algorithm as a symmetric encryption and RSA algorithm as a asymmetric encryption. In DES same key is used for encryption and decryption and mainly secured by secret key method. RSA is mainly exposing an asymmetric method in the encryption and decryption algorithm. It is a method of asymmetric Technique, that here public key distributed to all through which one can encrypt data of the original message and private key which is used for decryption is maintained for more privacy to keep secret and it will not share to every person.

Akshay Arora [4] uses hybrid algorithm for data security in cloud. Here it's give benefits of both symmetric and asymmetric encryption. He use AES and RSA algorithm. First the RSA generates Public and Private Keys which are later used by the AES in order to commence data encryption. The Private key of the AES again undergoes encryption through RSA and is saved in the data base after adding salt to it. In this way the user data is stored in an encrypted form at the Cloud end and whenever the user wishes to access it will be available after successful decryption.

Kunal V. Raipurkar [5] uses LDAP and two way encryption algorithm. The LDAP authentication method is used for identification of valid user. LDAP authentication Based on TCP/IP protocol therefore it is very easy to implement on any system. In two way encryption algorithm key generation is done by Secure Hash Algorithm (SHA-512) and this key is passed to the Advanced Encryption Algorithm (AES). This two way encryption algorithm provides more security for users and cloud providers.

B. Data Backup And Recovery Service

In cloud, as number of user shares the storage and other resources, it is possible that other customers can access your data. Either the human error, faulty equipment's, network connectivity, a bug or any criminal intent may put our cloud storage on the risk and danger. And changes in the cloud are also made very frequently; we can term it as data dynamics. The data dynamics is supported by various operations such as insertion, deletion and block modification. Since services are not limited for archiving and taking backup of data; remote data integrity is also needed. [8] Because the data complete state of the server that takes care of the heavily generated data which remains unchanged during storing at main cloud remote server and transmission. Integrity plays an important role in back-up and recovery services.

There are many techniques have been proposed HSDRT, PCS, ERGOT, Linux Box, Cold/Hot backup strategy etc. that, discussed the data recovery process.

Ms. Kruti Sharma [8] discussed about a smart remote data backup algorithm, Seed Block Algorithm (SBA). SBA helps the users to collect information from any remote location in the absence of network connectivity and also help to recover the files in case of the file deletion or if the cloud gets destroyed due to any reason. It basically uses the concept of Exclusive-OR (XOR) operation of the computing world. SBA is very much robust in maintaining the size of recovery file same as that the original data file.

Yu Gu [7] discussed about DR-Cloud which is multi cloud based disaster recovery service. With DR-Cloud, resources of multiple cloud service providers can be utilized cooperatively by the data disaster recovery service provider. And customers only need to deal with that service provider, using very simple and unified service interface, without concerning the internal processes between heterogeneous clouds. DR-Cloud can ensure high data reliability, low backup cost, and short recovery time by using intelligent data scheduling strategies. In this replica scheduler is important. [7]

C. Multi cloud Security

Multi-cloud computing is relatively new concept, biggest security aspects in cloud computing basically are data intrusion, data integrity and service availability are handled in much better way in multi-cloud than single cloud computing.

Mohammed A. AlZain[2] is discussed about multi cloud security. It proposes a Multi-clouds Database Model (MCDB) which is based on Multi-clouds service providers instead of using single cloud service provider. MCDB ensures security and privacy in cloud computing environment and is based on multi-clouds service providers and the secret sharing algorithm. The purpose of this model is to avoid the risk of malicious insider in the cloud and to avoid the failing of cloud services. MCDB contains three layers: the presentation layer, the application layer, and the data management layer. The presentation layer contains the end user's browser and HTTP server. The application layer contain servlet engine. The management layer consists of the Database Management System (DBMS) and the database service provider.

Arun Singh [6], use Shamir secret sharing algorithm for securing multi cloud. a secret sharing scheme is a method for distributing a secret amongst a set of participants, each of which is allocated a share of the secret. The secret can be recreated when the shares are united together; individual shares are of no use on their own. In secret sharing scheme there is only one dealer and n player. The dealer a secret to the players, but only when specific conditions are fulfilled. This secret sharing Algorithm is threshold sharing scheme and is based on the Lagrange polynomial interpolation.

V. CONCLUSION

In this paper, we reviewed on data security in single cloud and multi cloud and also review on data backup and recovery service in cloud. There are different techniques are used to secure data in cloud. Shifting from single clouds to multi clouds is to ensure the privacy and security of user's sensitive information. Here these paper focus to create secure cloud system with the benefits of backup and recovery service.

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