Secure Multi Cloud Data Hosting Scheme with High Availability Using SIC Architecture

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Abstract— Hosting data on to the cloud reduces IT maintenance cost and enhance the data reliability. Nowadays cloud computing becomes a popular because of data reliability and low IT maintenance cost. In general customer put their data on single cloud. There are two drawback of putting data on single cloud, first is vendor lock in problem and second is security on cloud. The solution on this problem is putting data on different cloud server without redundancy using encryption algorithm. Cloud computing provide easy data retrieval. Customers do not want to lose their sensitive data on cloud. Another issue of cloud computing is data theft should be overcome to provide better service. Multi-cloud environment has ability to reduce the security risks. To avoid security risk we provide framework.

Index Terms— Cloud computing, cloud storage, data hosting, data intrusion, multi-cloud, single cloud.

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1 INTRODUCTION

1.1 MOTIVATION

THE Cloud computing can be defined as a pool of virtualized computing resources that allows users to gain access to applications and data in a web-based environment on demand [1]. In a cloud computing environment, individuals and businesses work with applications and data stored and/or maintained on shared machines in a internet environment rather than physically located in the home of a user or as corporate [2] environment. More and more enter-prises and organizations are hosting all or part of their data into the cloud, in order to reduce the IT maintenance cost (in-cluding the hardware, software, and operational cost) and enhance the data reliability [3], [4], [5].

Ubuntu was a famous player in the market of cloud sto-rage service, escaped in Apr. 2014 [6]. So clearly, it is unwise for an enterprise or an organization to host all data in a single cloud. This type of lock in vendor can put into trouble to the clients of cloud service providers such as data migration. If client of cloud service provider have a data in PB then migra-tion would be very costly for that particular client when ven-dor lock in occurs. The main drawback of vendor lock in is security for example suppose we put all data on two different cloud if intruder attacker hack one of these cloud server all information stored on that that cloud will be in hackers hand. We will recover drawback of vendor lock in here by secure multi-cloud storage but without redundancy for preventing hacker and data intrusion. The multi-cloud data hosting is good solution on vendor lock in problem but secure multi-cloud will protect stealing data for example if malicious user successfully attack on single cloud, he get all data. We will recover this drawback in secure multi cloud data hosting scheme we will not going to place all data on multi cloud as data redundancy. We will put some amount of data on different cloud but without redundancy. User unaware about which data is going on which cloud and drawback of redundancy of data will remove because redundancy uses more space on different cloud and cost of data migration will also reduce.

In multi cloud data Storage, Data and Information will be shared with external users, therefore cloud computing users want to avoid important information from attackers or malicious insider is of critical importance. Users are responsible for protecting operating system and cloud providers must provide protection for user's data. Resources in the cloud are accessed through the Internet, frequently even if the cloud provider concentrates on security in the cloud infrastructure; the data is still transmitted to the users through networks which may be insecure.

SIC - Secure Inter-Cloud Architecture. The proposed architecture is the 3 tier architecture. In our architecture, there is one CSP i.e. cloud service provider. This is the main central server which keeps the data about clients. Client in the diagram represents any cloud service user. Clients/users do not have any idea about where exactly the data/files have been stored. Data is stored in cloud server. The servers may reside in different physical locations. The CSP decides the servers to store the data depending upon available spaces. We can use load balancing algorithms for making the decision, on which server we should actually store the data. The CSP will also keep track about the files stored on each server. The cloud servers will only store the data, but they will not have any records about the user accounts, their passwords or encryption and decryption keys. [7].

1.2 Objective

The main objective is to develop a cloud based social networking application with secure multi-cloud architecture and to implement security and load balancing technique in multi-cloud architecture.

We will use algorithms such as Least Loaded algorithm, this algorithm is used to find out load on each cloud storage server. In this scheme, the system assigns the next request to the server that has the lowest workload (workload of a server is defined as the sum of the documents stored on the server). Advanced Encryption Standard encryption/decryption algorithm, this is used to encrypt and decrypt the uploaded file.

2 LITERATURE SURVEY

There are already been plenty of research work on cloud com-

puting, multi-cloud data hosting, security cloud, with server approaches that usually have some differences from the one presented in these papers. The cloud services are used to store data as well as applications. We are here combining and improving two method of multi-cloud which are data hosting and security. It provides many benefits like cost, reliability and easy in retrieval of data. Security in cloud computing is gaining more and more importance as organizations often store sensitive data and importance data on cloud [7].

Traditional approach of using single cloud server, may also lead in slowing down the retrieval of data. Dealing with single cloud providers is becoming less favorable with customers due to commonly occurring problems such as service availability failure and the possibility that there are malicious insiders or hackers in the single cloud. In recent years, there has been a move towards multi-clouds, inter cloud or cloud-of-clouds. [10]

Security of data in cloud is an issue which should be focused carefully. Customers do not want to lose their sensitive data or data intrusion due to malicious insides and hackers in the cloud. Vulnerabilities in a particular cloud service or cloud computing environment can potentially be exploited by criminals and actors with malicious intent [9]. In addition, the loss of service availability has caused many problems for a large number of recently. Data intrusion technique create many problems for the users of cloud computing. The other issues such as data theft, data lost should be overcome to provide better services to the customers [7]. Privacy pre-servation and data integrity are the two main issues faced by single Cloud service providers. In his/her own organization one can ensure strong security policies. But in case of cloud computing one has to trust completely on his service provider. [8]

It is observed that the research into the use of inter cloud providers to maintain security has received less atten-tion from the research community than has the use of single clouds. Multi-cloud environment has ability to reduce the security risk as well as it can ensure the security and reliability. The system aim to provide a framework to deploy a secure cloud database that will guarantee to avoid security risks facing the cloud computing community this paper suggested architecture for cloud environment which will help in reducing the security threads [7]. The efficient and secure use of cloud computing will provide many benefit to the organizations in terms of money and ease in access to the data.

With the blossom of cloud services [12], there is a re-cent interest in addressing how to migrate data and applica-tions into clouds seamlessly [13], [14]. The system designed in [14] migrate Network File System (NFS) into the cloud, and meanwhile makes it feel like working locally. A similar work in [14] proposes a hybrid cloud-based deployment, where enterprise operations are partly hosted on-premise and partly in the cloud.

In short the main issue of cloud computing is se-curity. For protection of data we are here going to do secure multi cloud data hosting. Multi cloud data hosting in the sense, instead of putting all data on single cloud we put some data on different cloud. The drawback of putting same data on different cloud is occupying more space on different cloud for same data and

if vendor lock in problem occurs, then migration charge will be high. We are here reducing migration charge by using multi cloud data hosting without redundancy data storage space will also reduce. For security AES encryption algorithm we are here going to use.
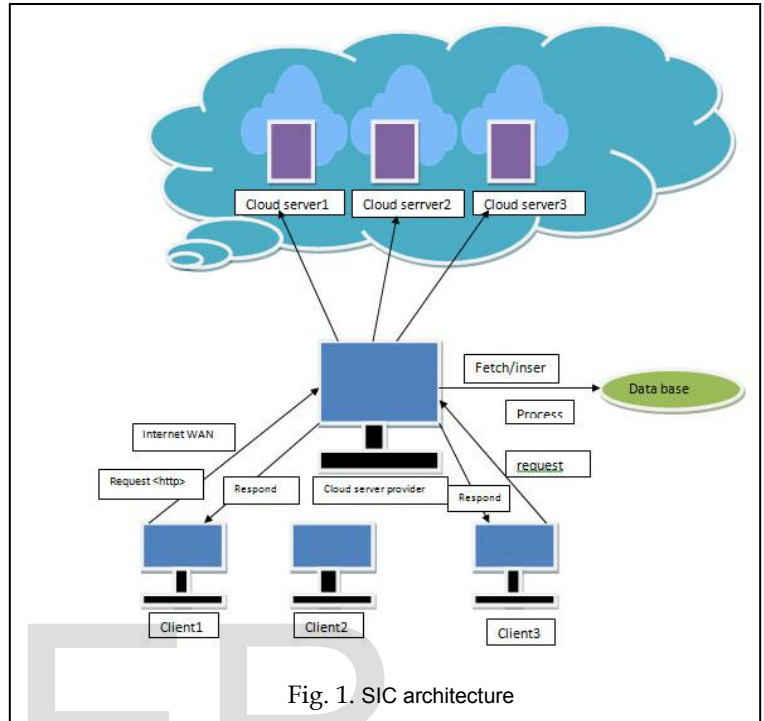

Fig. 1. SIC architecture

3 PROPOSED WORK

We proposed Secure Multi-Cloud Data Hosting Scheme with High Availability Using SIC Architecture scheme. It intelligently puts data into multiple clouds by checking load balancing on cloud server. We are going to propose AES encryption algorithm for data encryption and decryption. Also we are here proposed to use load balancing algorithm for checking which server has minimum load.
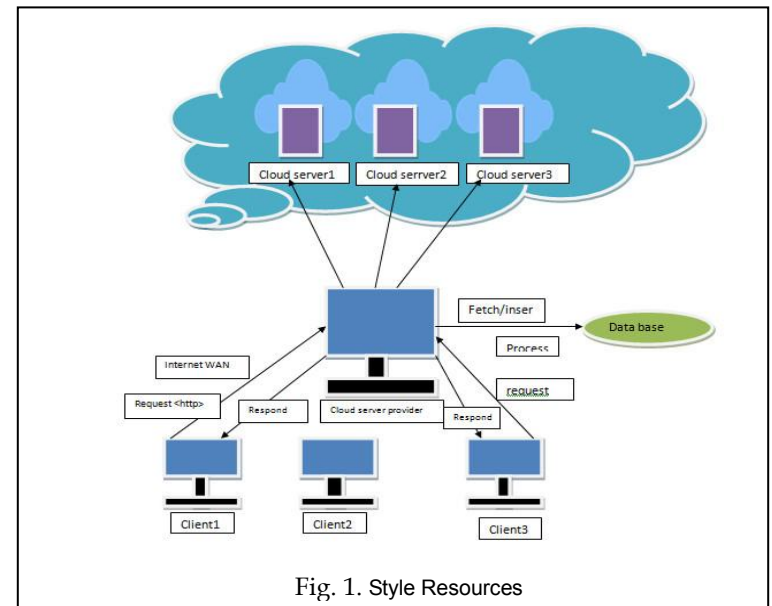

Fig. 1. Style Resources

4 CONCLUSION

The use of cloud computing have been increase during last decade, the main issue is cloud computing security. Secure cloud storage of data on cloud server to customer is essential. We are here proposed a secure multi-cloud architecture in cloud computing, which provide secure environment to customer to store and retrieve information or data securely and without access failure and within minimal time. We support the migration of multi-clouds due to its ability to decrease security risk that affect the cloud computing server. We are going to provide secure data by using encryption and by storing data on multiple cloud servers. The sensitive user account information will also secure on different center server which will help in securing the data from attacks.

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