

A Novel Approach for Multi-Cloud Storage security in Cloud Computing

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Abstract-In the last few years, cloud computing has grown from being a promising business concept to one of the fastest growing segments of the IT industry. Now, recession-hit companies are increasingly realizing that simply by tapping into the cloud they can gain fast access to best-of-breed business applications or drastically boost their infrastructure resources, all at negligible cost. But as more and more information on individuals and companies is placed in the cloud, concerns are beginning to grow about just how safe an environment it is. The Cloud data Storage redefines the security issues targeted on customer's outsourced data (data that is not stored/retrieved from the costumers own servers). In this work we observed that, from a customer's point of view, relying upon a solo SP for his outsourced data is not very promising. In this paper, we propose a secured cost-effective multi-cloud storage security model in cloud computing which holds an economical distribution of data among the available SPs in the market, to provide customers with data availability as well as secure storage. Our results show that, our proposed model provides a better decision for customers according to their available budgets.

Keywords-Cloud computing, security, storage, cost-effective, cloud service provider, customer.

I.INTRODUCTION

One of the prominent services offered in cloud computing is the cloud data storage, in which subscribers do not have to store their data on their own servers, where instead their data will be stored on the cloud service provider's servers. In cloud computing, subscribers have to pay the service providers for this storage service. This service does not only provides flexibility and scalability for the data storage, it also provide customers with the benefit of paying only for the amount of data they need to store for a particular period of time, without any concerns for efficient storage mechanisms and maintainability issues with large amounts of data storage. In addition to these benefits, customers can easily access their data from any geographical region where the Cloud Service Provider's network or Internet can be accessed. Data storage also redefines the security issues targeted on customer's outsourced data (data that is not stored/retrieved from the costumers own servers). Since cloud service providers (SP) are separate market entities, data integrity and privacy are the most critical issues

that need to be addressed in cloud computing.

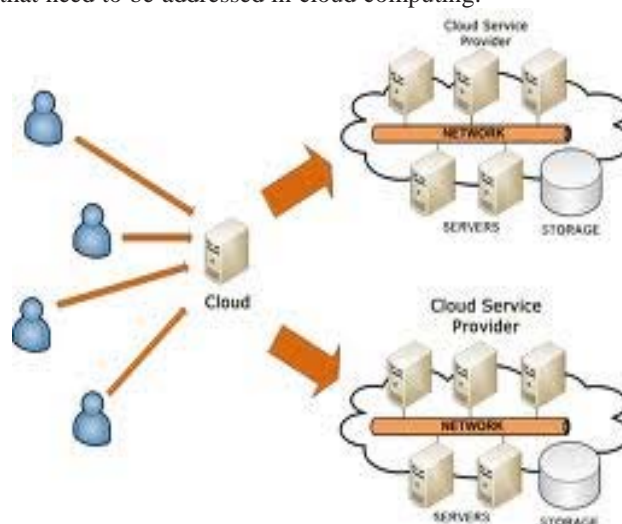


Fig1: distribution of data over several SP's

In addition, providing better privacy as well as ensure data availability, can be achieved by dividing the data among several SP s available in the market, based on his available budget. Also we provide a decision for the customer, to which SP s he must chose to access data, with respect to data access quality of service offered by the SP s at the location of data retrieval.

In this survey we also provide the user with better assurance of availability of data, by maintaining redundancy in data distribution. In this case, if a service provider suffers service outage or goes bankrupt, the user still can access his data by retrieving it from other service providers. From the business point of view, since cloud data storage is a subscription service, the higher the data redundancy, the higher will be the cost to be paid by the user. Thus, we provide an optimization scheme to handle the tradeoff between the cost that a cloud computing user is willing to pay to achieve a particular level of security for his data. In other words, we provide a scheme to maximize the security for a given budget for the cloud data.

II. CLOUD COMPUTING

An IT model or computing environment composed of IT components (hardware, software, networking, and services) as well as the processes around the deployment of these elements that together enable us to develop and deliver cloud services via the Internet or a private network.

A. Objectives

The main objective of our study is to provide the cloud computing users a decision model that provides a better security by distributing the data over multiple cloud service providers. Our study also provide the user with better assurance of availability of data, by maintaining redundancy in data distribution and providing hypervisor protection against network attacks, low-cost disaster recovery and data storage solutions, on-demand security controls, real time detection of system tampering and rapid re-constitution of services

B. Methodology

Cloud service users need to be vigilant in understanding the risks of data breaches in this new environment. In this study, a survey of the different security risks that pose a threat to the cloud will be studied. This study is a survey more specific to the different security issues that has emanated due to the nature of the service delivery models of a cloud computing system. The data will also be collected from e-journals, review papers, Books, Articles and magazines.

III. MODULES

First in this section, we will describe our cloud storage model and the system model. Then, formally we will describe our problem statement we are going to study in this paper. Note that, in this work the terms cloud service provider and service provider are interchangeable, the terms cloud storage and cloud data storage are interchangeable, also the terms user and customer are interchangeable.

A. Secured Multi-Cloud Storage:

In this project to mitigate the threats facing cloud storage, we extended the cloud data storage to include multiple service providers, where each cloud storage represents a different service provider. Our motivation behind such an extension is that, the adversary, similar to any other cloud user, is abstracted from the actual clouds of servers implemented by different cloud service provider. One of the obvious objectives in this scenario is to minimize the cost of storage of the data pieces over service providers.

B. System Overview:

We consider the storage services for cloud data storage between two entities, cloud user and cloud service providers. The cloud storage service is generally priced on two factors, how much data is to be stored on the cloud servers and for how long the data is to be stored. In our model, we assume that all the data is to be stored for same period of time. We

consider number of cloud service providers each available cloud service provider is associated with a factor, along with its cost of providing storage service per unit of stored data. Every has a different level of quality of service offered as well as a different cost associated with it. Hence, the cloud user can store his data on more than one according to the required level of security and their affordable budgets.

CONCLUSION

In this paper, we propose a secured cost-effective multi-cloud storage security model in cloud computing which holds an economical distribution of data among the available SPs in the market, to provide customers with data availability as well as secure storage. Our results show that, our proposed model provides a better decision for customers according to their available budgets.

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