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A new Framework for Improving Security for Data Migration in Cloud Computing

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ABSTRACT

With the increase within the development of cloud computing setting, the safety has become the main concern that has been raised additional systematically so as to move data and applications to the cloud as individuals don't trust the third party cloud computing providers with their private and most sensitive information and data. This research propose an inter-cloud data migration mechanism that provides higher security guarantees and quicker interval for migrating giant scale information files in cloud management systems. Information migration is one among popular technologies that enable computing and data storage management to be autonomic and self-managing.

Key word: *Cloud computing, data migration*

I. Introduction

Cloud computing advanced procedure power and improved storage capabilities. Cloud computing permits the sharing of services over the web, which may be seen as a long unreal vision of computing utility. The framework tend to store data and run application at the Cloud, consists of an oversized group of interconnected computers. Value savings is the main advantage over the cloud on the opposite hand its security is leading disadvantage. Several computer code industries use cloud like Amazon, Google, e-Bay and Facebook etc.Many institutions adopt their own structure for the data security. Security is not guaranteed over the cloud since the information placed at cloud is accessed by anybody.

Types of cloud computing:

Public Cloud: Referred to as Shared Cloud as resources and services area unit shared among large no of users. Example of combination of SaaS and Public Cloud is Google Docs where each user can manufacture their document and share among completely different users. Throughoutthis Google Docs is code on Public cloud that is freely on the market to all or any users. Example of combination of PaaS and Public Cloud is Windows Azure. Example of combination of IaaS and Public cloud is Amazon EC2 Cloud.

Private Cloud: It is kind of cloud that is developed for single organization. In this kind of cloud, services are managed by third party or by organization by themselves. Maintenance, security are managed by organization solely. Individuals working in organization can use the services and resource of cloud while others are restricted to use. Main advantage of private cloud over public cloud is that control over all services and resources in hands of organization, they'll customise services and resources according to their organization requirements.

Community Cloud: It is an extension to private cloud. Community cloud has similar options to private cloud in terms of services and resources however it's utilized by large number of user than private cloud users. Community cloud is combination of three or four personal cloud that has common options.Community clouds are ruled by a community or by third party and completely different organization users will use community cloud.

Hybrid Cloud: As the name suggests this sort of clouds are combinations of different quite cloud (public, private, community). Its combine the public and

private cloud and community cloud's characteristics. Its advantage is that each type of user wherever insider or outsider of organization will access the cloud services and resources.

Cloud computing services

SaaS (Software as Service): In this Cloud Service provider develops or install code on cloud and accessible these code to users on rental basis. It's the front layer in style of cloud computing that represents face application of cloud computing. Among each variety of services it is best service to use and users need to contemplate solely a number of things to use it. Most of the appliance of SaaS is directly accessible via internet browsers whereas some are developed for Desktop Application. SaaS is that the simplest services on cloud and want not any code to place in on your machines to use it. Cloud Service provider style these service with care that user can user them terribly simply.

PaaS Platform as a Service: If people expect regarding Service Model as layer design than users will say Platform as Service is layer once coding system as service layer. Platform as service means providing platform like net server, software. Really Platform provides atmosphere for the event of coding system applications on cloud.

All the pc code services area unit developed on the premise of underline platform. Platform as a service is provided via virtual machines place in on cloud.

IaaS Infrastructure as Service: It is the bottom abstraction layer of service model. It's also mentioned as Hardware as a Service. All the physical devices like server, network devices, storage disk comes below IaaS. During this CSP provides Infrastructure only and users need to set their own platforms like operating systems, data servers, net servers and need to develop their own code packages. All reasonably terms and condition to use this code is created by users only. Security, resource pooling like issues are handled by users only. Users have a tendency to the Cloud- Migration system that provides each configuration validation and installation automation which minimize the configuration errors and installation complexness.

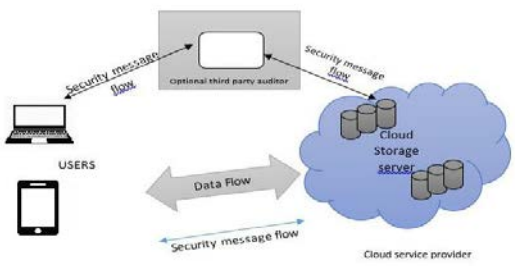

Figure 1: Architecture of cloud data storage

II. Data Migration in Cloud

Information Migration may be a method that involves moving an oversized quantity of knowledge or applications to the target cloud. The target cloud are often a public cloud, a private cloud or hybrid cloud. An organization's business needs massive numbers of applications to meet and to boost its growth, currently information migration method is provided as DaaS (Database as a service). The information can be often migrated in many ways such as –from any organization to a cloud or from one cloud to other cloud. though it's comparatively powerful task to migrate information and information migration involves many major security problems like information integrity, confidentiality, security, movability, data privacy, information accuracy etc.[2][3][4]

i. Pre-Migration: In pre-migration technique before migrating the information to cloud, some transformational activities are done before. These activities include server virtualization, platform upgrades of server and separation of data.

ii. Post-Migration: during this methodology, transformational activity is completed when the migration has completed in the cloud. When the migration services are with success transitioned to the cloud, information Centre Migration programmed ought to wind-down.

Automatic and manual information cleansing to migrate so as to enhance information quality eliminate redundant or outdated information, the new system to match the requirements. From moderate to extremely complex information migration phases (design, extraction, cleaning, loading, and validation) are sometimes repeated many times before the deployment of the new system.

Data migration is that the method of importing inheritance information to a new system. This can involve getting into the info manually, moving disk files from one folder (or computer) to a different, database insert queries, developing custom software system, or different strategies. The specific technique used for any explicit system depends entirely on the systems involved and therefore the nature and state of the data being migrated. Cleansing of data is that the technique of preparing legacy information for migration to a new system. as a result of the design and storage technique of recent or updated systems are sometimes quite completely different, legacy information typically doesn't meet the criteria set by the new system, and must be changed before migration. For example, the legacy system might have

allowed information to be entered in an exceedingly manner that is incompatible with the new system.

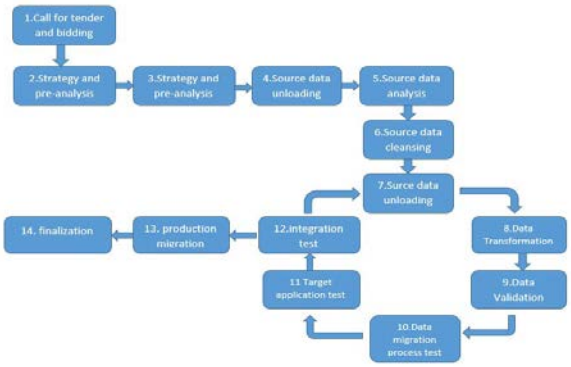

Figure 2: Steps of distributed database transmission system

III. Related Work

[K.V.ArunKumar et. al 2012] proposed Testing as a service (TAAS) - An enhanced security framework for TAAS in cloud environment. By this service the end users can save their unwanted cost of up gradation, and other maintenance. Because in this service, service providers update their server without making any impact on the end users. Testing as a service is gaining more attention in the present time of cloud computing due to the less cost, on demand testing services etc. The TaaS includes the major workflows like process management, testing management, Quality assurance, on demand testing facility and different management services.

[**SwarnalataBollavarapu et. al 2014**] have proposed the Data security in cloud computing. This time the cloud computing has become the boon of the IT industry. It is like the next step of internet evolution with a managed and efficient platform to data storage with the different capabilities and applications. If a system has some pros it also have some cons also like that cloud computing have some problems which includes the cloud security, manageability, integrity, theft, data loss and others

[Kamalpreet Kaur et. al 2015] have proposed A systematic path to cloud server optimization of data using orthogonal recursive bisection technique for cloud migration. Cloud computing is a needful because it provides online hardware and software service over internet to complete the task in minimum way. But due to more usage it suffers many problems like overloading, migration, resources utilization, energy management, server consolidation etc. Virtual migration techniques follows pre and post copy technique. For the performance of system they used cloud sim simulator which dynamically compares the balance algorithm and allocates virtual machine to server.

[**Tamanna Narulaet. al 2014**] proposed framework for analysing and testing cloud based application. In this paper they proposed that software testing is the main processing of accessing functionality and correctness off a program through analysis. In software engineering related projects testing has become the challenge, especially for the major system. Because testing can be such a difficult and costly and more manpower required process. Cloud computing have some testing techniques which includes functional, multitenancy, performance, security, compatibility, negative testing and conformance to standards. And testing works as a SaaS in a cloud, of Cloud, inside a cloud and over a cloud, which also provides advantages of cloud computing like less management, effective cost, work independently, improve testing efficiently, more realistic, changes in external environment.

[Rashmi Rao et. al 2014] proposed improving security for data migration in cloud computing using encryption randomized technique. Cloud computing have different paradigms in the world of computing resources. Collection of machine and resources and services forms a cloud in computing technology. In the cloud computing multiple resources and services are provided over the internet to the user. It is helpful to the user to reduce their operating and maintenance cost.

[Noor Ibrahim Hussein et. Al 2013] projected needs of security migration from legacy system to cloud and from cloud to cloud. Cloud computing is a proficient technology and useful technology. It provides advantages to several corporations and organizations. Migration method from corporations system to the cloud is extremely tough to method quite migration from one cloud server to a different cloud server. Because at the time of migration it doesn't show the situation of data and procedure of data however it shows the design of data migration with the choice of information and transmission of data from legacy server to cloud server. Within the information migration the necessity demands is that the information security at the time of migration. Security issue is the problem for corporations, organization and user additionally.

IV. Proposed work

This research proposes an efficient and versatile distributed theme with express dynamic data support to confirm the correctness of users' data in the cloud. This analysis consider erasure correcting code within the file distribution preparation to produce redundancies and guarantee the information reliability. This construction drastically reduces the communication and storage overhead as compared to

the traditional replication-based file distribution techniques. By utilizing the homomorphic token with distributed verification of erasure-coded data, our theme achieves the storage correctness insurance as well as knowledge error localization: whenever information corruption has been detected during the storage correctness verification, our theme can virtually guarantee the concurrent localization of knowledge errors, i.e., the identification of the misbehaving server(s).

1. In contrast to most prior works for making certain remote data integrity, the new theme supports secure and economical dynamic operations on knowledge blocks, including: update, delete and append.

2. Extensive security and performance analysis shows that the proposed theme is extremely economical, malicious knowledge modification attack, and even server colluding attacks. The foremost of the dominant databases like MySQL, MSSQL, etc. do not appear to be cross platform by itself. But the vendors provide versions for each platform. In databases like MySQL there is restriction inside the foremost vary of cursors that will be used. Therefore it cannot support style of applications as rear at constant time. Next disadvantage arises inside the case of knowledge format they use. Proprietary information storage formats cause issue in porting the information and feeding information to applications

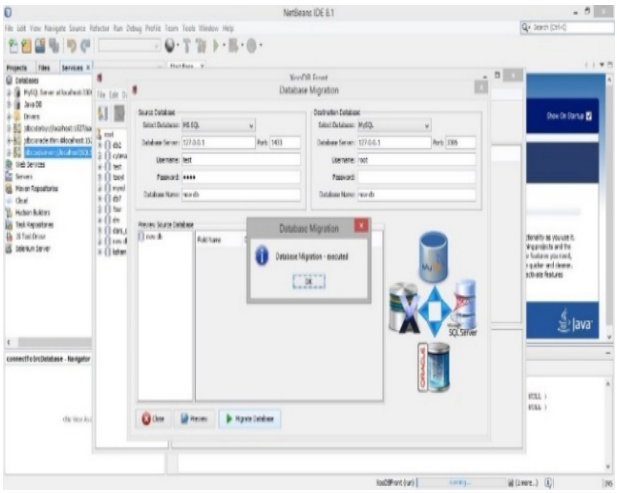

Figure 4: Data migration from MySQL to MySQL

V. Conclusion

The problem information security in cloud data storage that is actually a distributed storage system. To make sure the correctness of user's information in cloud information storage, the researchdefine an efficient and versatile migration scheme with specific dynamic information support, as well as block update, delete, and append. And consider code within the preparation of file distribution to produce redundancy parity vectors and guarantee the information reliable. By utilizing with distributed verification of coded information, i.e., whenever information corruption has been detected throughout correctness of the storage verification across the distributed servers, user can nearly guarantee the concurrent identification of the misbehaving server(s).

VI. Future Work

That information storage security in Cloud Computing, a vicinity filled with challenges and of overriding importance, remains in its infancy currently, and lots of analysis issues are yet to be known. This research envision many attainable directions for future analysis on this space. The most promising one to believe is a model in which public verification is enforced. Public verification, supported in permits TPA to audit the cloud knowledge storage while not demanding users' time, practicableness or resources. A remarkable question in this model is a scheme to attain each public verification and storage correctness assurance of dynamic information. Besides, at the side of our research on dynamic cloud information storage.

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