Survey Paper on Security Issues While Data Migration in Cloud Computing

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Abstract- **Cloud computing is the new buzz area that combines several computing concepts and technologies of the Internet for creating a platform for cost-effective business applications and IT infrastructure. The adoption of this Cloud computing has been increasing for some time and the maturity of the market is growing steadily. So at that time while data migration, Security is the question most consistently raised as consumers look to move their data and applications to the cloud. So here in this paper I lookout the importance and motivation of security in the data migration in cloud and I survey all the security approaches related to security in migration processes to cloud with the aim of finding the concerns, needs, aspects, requirements, benefits and opportunities.**

Index Terms-- **Security; Cloud Computing; Data Migration; Encryption**
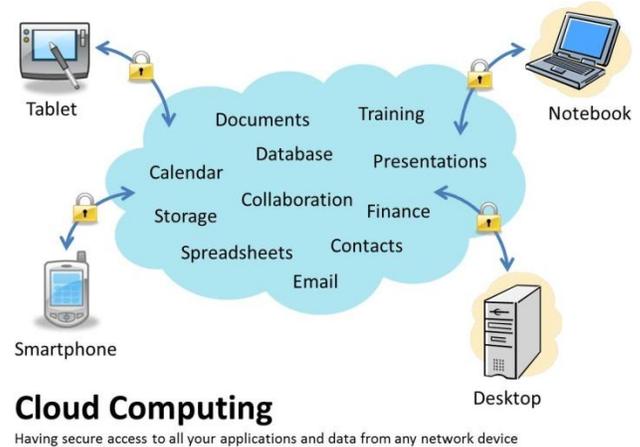
I. INTRODUCTION

Cloud computing is a term that is defined to see major change in how we store information and run applications on cloud. Instead of running programs and data on an individual desktop computer, everything is placed in the "cloud"— a multiple assemblage of computers and servers accessed via the Internet. Cloud computing access all your applications and documents from anywhere All over the world, freeing you from the confines of the desktop and making it easier for group members in different locations to collaborate it.

With the cloud computing, the software programs you use are not run from your home computer, but are instead stored on servers accessed via the Internet. If your computer crashes due to any reasons the software is still available for others to use. The same goes for the documents you create, they are stored on a collection of servers accessed via the Internet. Anyone with the permission can not only access the documents, but can also edit and cooperate on those documents in real time. So unlike traditional computing, Cloud computing model isn't PC-centric, it's document-centric.

Cloud Computing
Having secure access to all your applications and data from any network device

II. SERVICES OF CLOUD

Cloud services are usually divided in the three main types, Software-as-a-Service (SaaS), Platform-as-a-Service (PaaS) and Infrastructure-as-a-Service (IaaS).

a. Software as a Service (SaaS)

In this, the administration of these services such as updating and patching are in the provider's responsibility. The one big benefit of SaaS is that all clients are running the same software version and new functionality can be easily integrated by the provider and is therefore available to all the clients. Eg. Salseforce.com

b. Platform as a Service (PaaS)

PaaS Cloud providers offer an application platform as a service, Eg. Google App Engine. This enables clients to use custom software using the tools and programming languages offered by the provider. The Clients have control over the deployed applications and environment-related settings. As with SaaS, the management of the underlying infrastructure lies within the responsibility of the provider.

c. Infrastructure as a Service (IaaS)

IaaS delivers hardware resources such as CPU, network or disk space components as a service. These resources are usually delivered as a virtualization platform by the Cloud provider and can be accessed across the Internet by the client. The clients have full control of the virtualized platform and are not responsible for managing the underlying infrastructure.
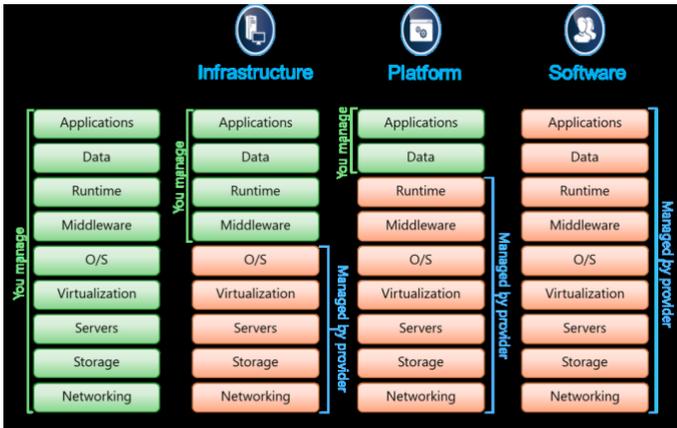
III. DATA MIGRATION IN CLOUD

Data Migration is a the method of moving a large amount of data and applications into the target cloud where the target cloud can be – a public, a private or hybrid cloud. Since large numbers of applications are required to fulfill an organization's business needs and to improve its growth, various models of DaaS (Database as a service) are now provided keeping in view the data migration process. The data can be migrated in several ways such as –from any organization to a target cloud or from one cloud to another cloud. But it is quite challenging task to migrate data and it involves various major security issues as well like data integrity, confidentiality, security, portability, data privacy, data accuracy etc.
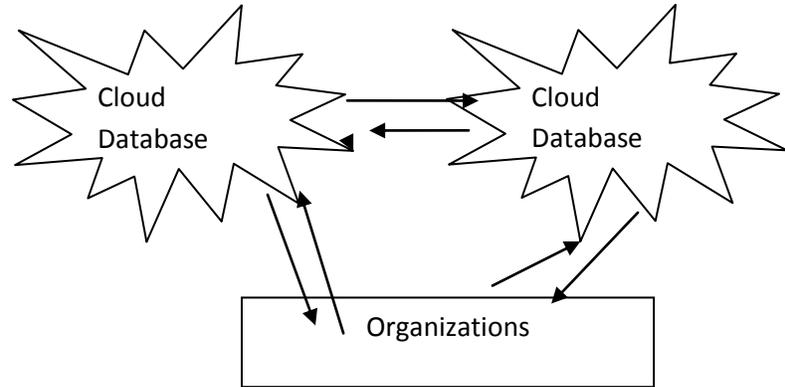
IV. DATA MIGRATION TECHNIQUES

1. Pre-Migration: In pre-migration method some transformational activities are done previously before migration the data to cloud. This activities include server virtualization, data separation or server platform upgrades. The main purpose of this method is to make transformation easier by changing data into required format. So main advantage of this method is only those that make the migration easier, faster or less risky.

2. Post-Migration*:* In this method, transformational activity is done after the migration has completed is a common requirement. Once the migration services have been successfully transitioned to the cloud, Data Centre Migration programmed should wind-down.

V. NEED FOR SECURE DATA MIGRATION

As we all know that now days about 70% MNC's are working on cloud for the better use of data that are transferred from one cloud to another cloud or within the same cloud. So at the time of data migration the most important concern related to this is Security.

Example: Suppose an ABC company wants to shift its data to cloud storage for increased uptime and scalability, it goes to cloud service providers like Amazon, Google and Microsoft etc for performing such functions. And now the cloud provider starts initializing steps for data transfer to cloud, but in between they face problems like data crash or unauthorized access by the third parties. This is the main area where the problem lies. The proprietor of data that hired cloud manager would not only face reputation losses but also monetary losses. Thus, securing data remains an important priority of cloud managers to prevent global cloud security threats that also include cross-border security concerns.

VI. METHODOLOGY FOR SECURING DATA MIGRATION

Types of Cryptographic Algorithms

There are several ways of classifying cryptographic algorithms. In general the algorithms are categorized based on the number of keys that are used for encryption and decryption. The three types of algorithms are

1) Secret Key Cryptography (SKC): Uses a single key for both encryption and decryption. The most common algorithms in use include Data Encryption Standard (DES), Advanced Encryption Standard (AES).

2) Public Key Cryptography (PKC): Uses one key for encryption and another for decryption.RSA (Rivest, Shamir, Adleman) algorithm is an example.

3) Hash Functions: It uses a mathematical transformation to irreversibly "encrypt" information. MD (Message Digest) algorithm is an example.

VII. RELATED WORK

According to Rashmi Rao and Pawan Prakash [1], for ensuring security while data migration the encryption technique is used and the technique name is Prediction based encryption. In this technique they use Symmetric Encryption for security issue. The algorithm is as follows:

For Encryption
1) Initially, generate a random key.
2) Encrypt the data using that random key.
3) Encrypt the random key with the shared key.
4) Forward the data after encryption process from step 2 and step 3 together.

For Decryption
1) Now decrypt the encrypted random key with the shared key.
2) Then, decrypt the encrypted data with the decrypted random key.

According to R.Vinobha and Mr. R.Suresh [2], for ensuring security they use same encryption technique but they use a Armstrong number as an encrypted key. And they used Unimodular matrix to reduce the loss of data during the encryption and decryption process.

VIII.CONCLUSION

Cloud Computing is a growing because cloud provides users with access to high computational power at a fraction of the cost and also migrating enterprise applications and data within the cloud or over the another cloud. But if the users decide to use the services of cloud, a number of threats arise and for that possible solutions need to be carried out to protect their applications, services and data from those risks and for that particular security reasons Encryption techniques are used and by using that technique we ensure the security of data.

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