Cloud Computing Storage Security Server

[1] Shraddha S. Sadavarte [2] Asst. Prof. B.B.Bhusare

[1] Computer Science and Engineering, ME(STUDENT), MSS'S CET, JALNA, DR. BAM UNIVERSITY

[1] sujay.sada15@gmail.com [2] bhusare85bapu@gmail.com

Abstract: — Cloud computing provides different services to users & it is more widely used. Due to the issue of security in public cloud storage we used private cloud for storing organization critical data. Due to limited space in private cloud we used deduplication technique for efficiently utilised storage space. In that technique files splits into chunks & by comparing chunks with each other only unique chunks are stored in the storage. With a file storage corresponding metadata is also placed along for retrieval of that file & we need to maintain metadata & chunk index for achieve faster retrieval time, so we proposes index structure and we provide more data security to that private cloud by using different types of security based algorithm. So in private cloud the critical data is completely secured.

Index Terms— metadata management, indexing, Data security, deduplication, optimization.

I. INTRODUCTION

Cloud computing has a broad network access, we can use it from anywhere at any time. Cloud computing provides various service models as PAAS, SAAS, IAAS, & many more. Cloud service provider will manage and control the cloud resources. Client uses the client devices to access a cloud system via World Wide Web. Cloud Services Architecture, Cloud storage is a service for developers in which data is store, maintained, managed, backed up remotely and access data in cloud. The benefits of the cloud storage are flexible with reduced cost and provide rapid elasticity.

Cloud storage deployment models are public, private, hybrid and community cloud storage. In Public cloud the infrastructure is host & managed by the third-party service. It is provided for open use by the all general public. In Private cloud storage is completely managed within an organization's firewall settings & infrastructure is operated by the organization, a third party, or both of them. Hybrid cloud it is the combination of the public and private cloud. An organization may use the private & public cloud for the structured data, unstructured data. Community cloud storage infrastructure is managed, by one or more of the organizations in the community, a third party, or some combination of them,

While we mostly used public cloud for storage because it provides many advantages but also has certain downsides. In public cloud due to its multi-tenancy nature & provided for open use by the all general public of the cloud there is possibility of data leakage. At whatever time the data moved to a new service provider, there is no guarantee that

the complete data will be removed from the storage of old service provider or not so, for safely stored business critical data we prefer to used private cloud storage. It provides security & control over data.

II. BACKROUND

We used private cloud rather than public cloud for safely stored business critical data. Private cloud storage is set up with the storage resources of unused commodity machines within the organization. This storage is provided as a service to the users within an organization. So limited storage space in organization

As storage space is limited within an organization, so we need to utilize it efficiently. In organization different users uses the storage & store their files in the storage space. Any organizations many users may have the same data or copies of same data so lots of duplicate data created across the files that belong to those users. For efficiently utilization of organizations storage space Deduplication[3] technique used. Deduplication technique helps to remove the redundant data and utilize the storage space in an improved manner. In this techniques file is splits into no of chunks & chunk ID (hash value) of a chunk is calculated. A chunk index is maintained with the chunk ID and the location of the chunk. At the time of a file storage, its chunk ID of a chunk compared against the chunk index for finding duplicate chunk. To ensure only unique chunks need to be stored in the storage. Since with chunks of the file it is necessary to maintain the chunk IDs that constitute the file.

In private cloud there also issue of security may occur[8]. In private cloud the services are expected to be accessed internally, but there may chance of access of

services externally by staff members. In private cloud if no of individuals are accessing resources and then private cloud can be warning its security. So, we have to plan ahead for changing this risk. In private cloud we assumed high levels of trust exist when services are shared. But there may risks if any employee decides to abuse the trust shown to them and effectively hijack user's personalized content. Private Clouds reduce some of the risk because the environments are housed within an organization's walls, although then issue becomes of securing the critical data from other departments or sub-organizations. To solve this security issue we have to store our critical data on a cloud securely by using some security mechanism.

The objective of this is to decide the structure for the maintenance of the chunk indices & metadata (attributes of a file) to improve the performance of duplicate detection and retrieval of the file.[1] & provide more additional data security to private cloud (organizations critical) data. So no one can 130isuses the private cloud data

III SYSTEM DEVELOPMENT
A. *Existing System*

Deduplication enabled storage system has the challenge of maintaining the chunk ID and chunk index, metadata for the fast retrieval of a file.

For duplicate detection the existing system uses Extreme Binning which is fastest and efficient method for duplicate detection. In this method hierarchical index is used to hold the chunk IDs of a file. This hierarchical index is divided in two parts primary & secondary index. Primary index holds the representative chunk IDs Secondary index holds the unique chunks of files. This index helps to reduces the search time and facilitates fast retrieval of the file[4]. SHHC maintains a distributed hash table for storing chunk entries in Solid State Drives[2]. For organizing chunk IDs Efficient B+ tree indexing used[5]. It is able to maintain a large number of chunk IDs for the quick retrieval and also to speed up the searching. Due to this advantage, there's reduction in search time and comparison space. Application aware deduplication enables the storage to compare the chunks of a same application[7].

The objective of this existing system[1] is to build an Optimized Private Cloud Storage using commodity machine by employing deduplication technique. SHHC uses sophisticated device SSD to maintain the chunk index. As OPCS is built using commodity machines, it is not possible to maintain indexing such devices. Efficient B+ tree organize the chunk IDs without consideration of types of application

B. Limitation in Existing System.

In private cloud storage we used index technique for solving the problem of maintain file recipe and index to give faster and efficient retrieval of a file but the limitation with existing mechanism is, security of a data in private cloud storage. In that private cloud storage also data is not totally secured so for ensuring security to private cloud storage we use storage security server. which helps to provide integrity checking of a data, in that existing system the data communication may be hacked or corrupted so security need in that existing system.

C. Proposed Work and Objectives

To improve cloud data storage, we have to work on existing index technique for providing faster retrieval of data with that existing technique we are going to provide data security to our cloud storage, So the end users stores data in cloud and also they maintain data.
From our existing system we are not able to developed two things as given below

- SHHC which uses sophisticated device SSD to maintain the chunk index. Because OPCS is built using commodity machines, so it's not possible to maintain index in such devices[2].

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- Application aware deduplication is not used because in our propose system we are going to provide security to private cloud through different algorithms. So all files are encrypted & have the same format of encryption so that are[8] not able to categorize in different types of file. This provides the simplicity to a structure.

- for providing data security we uses different algorithm
- Data Integrity checking by using MD5 [data corrupt]
- Communication Security by using RSA
- Data Security by using AES

IV. PROPOSED SYSTEM ARCHITECTURE

Effective deduplication is performs and for fast & easy retrieval of data is done by arranging it in a index. It helps to provide higher data security to data and & prevent the data from attacks. By the integrity checking process, the data is stored with security. It checks data integrity of a Data with that it gives coummunication security & security to fies data[9].

A.RSA Algorithm.

This algorithm uses public-key cryptography; it involves a public key and a private key. The public key can be known to everyone and is used for encrypting messages & it is used at the time when user requested to cloud for storing a file on cloud. This Messages encrypted with the public key can only be decrypted on cloud by using the private key. This encryption decryption technique is used for store or

retrieval of a file so no one can hack or misuse the communication between user & cloud, no one can hack file or detail of a file at the time of store & retrieval process

B.MD5 Algorithm

It checks data integrity that is correctness of a data. It checks data is corrupted & data losses or not & maintain hash code means it calculates checksum of a hole file or each chunk at the time of storing & retrieval process of a file on cloud. It checks that the correct file is stored or retrieve on cloud or not & at the time of retrieval process of a fie it check each chunk checksum with its previous checksum so if it's not match means file is corrupt. In such situation cloud send file to user from another location so user always can store or got his original correct file from cloud

C.AES Algorithm

In cryptography, the Advanced Encryption Standard (AES) is a symmetric-key encryption standard[6]. AES algorithm ensures that the hash code is encrypted in a highly secure manner. In this algorithm one encrypted key is used & this encryption key encrypts the data. When in cloud storage client wants to store its more critical data in safe manner at that time this algorithm is used for providing higher security to that critical data. By using this encryption key client stores its document & no one able to decrypt that key so no one can able to see the content of this file
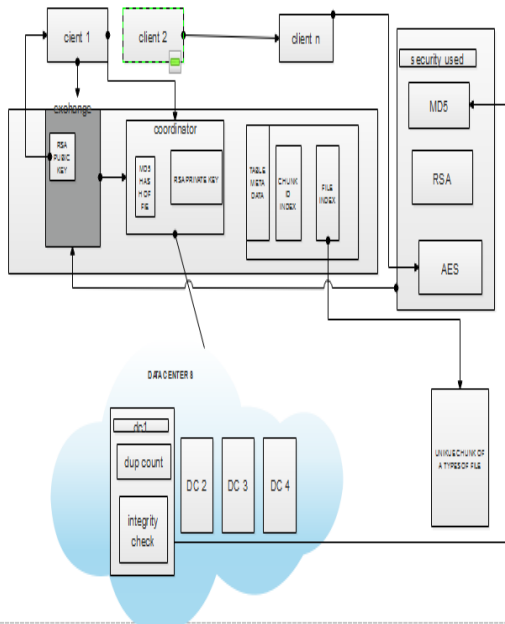

Fig-propose system architecture

D. Combined Result of These Algorithm

By using this algorithms we are able to provide total data security to our cloud. By checking integrity of data users

got his accurate data because many time user sends his correct file but it may corrupt on cloud or at time of retrieve process the downloading content may miss so this algorithm gives us correct file. By using RSA algorithm no one can able to hack the communication or for providing more additional security to data we uses AES algorithm so no one can hack data it means our private cloud is already secure than public cloud & by providing data security it gives additional security to cloud

V. CONCLUSION

We work on deduplication technique for efficiently utilize the storage space within the organization. In this storage only the unique chunks of files are in storage & for fast & efficient retrieval of a file chunk index and chunk ID are maintained. The results show that index performs better[1]. We are providing data security to critical data. We able to check data integrity & communication security .which gives better results. In today's era the demand of cloud is increasing, so the security of the cloud and the user is on the top concern. Our proposed system is helpful for the today's requirement.

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Engineering and Technology, Jalna, Maharashtra, India.

Shraddha S. Sadavarte. Doing PG in M.E.(CSE) from MSS's CET Jalna, Maharashtra, India

Prof. Bapusaheb B. Bhusare received his M.E. degree in Computer Science and Engineering from Government College of Engineering, Aurangabad. Working as Assistant Professor in CSE Department. Since last 6 years at MSS's College of