

# A Sequential, Secured and Sharable Data Storage Approach for Cloud Services

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**Abstract-** As Cloud computing is getting prevalent step by step, Cloud service providers need to take care of their systems with the policies which may lead to better execution and additionally privacy and consistency. According to the volume of users gets expanded, the framework makes more surface area for security attacks. Yet at the same time there are some issues related to privacy of the information, sorting the implicit fragmentation, and under encoding (compression) and so forth. This work recommends a simplified standard based distributed information privacy and consistency for cloud computing. Here, at the analytical level of evaluation, this approach is serving everything the needs of effective privacy and consistency mechanism and later prototype will legitimize the same.

**Keywords:-** Cloud computing, Data Security Confidentiality, Integrity, information privacy consistency, Encryption, Compression, Virtual Machine, Fragmentation.

## I. INTRODUCTION

The demand of outsourcing data has greatly increased in the last decade. To satisfy the need for data storage and high performance computation, many cloud computing service Providers have appeared, such as Amazon Simple Storage Service (Amazon S3), Google AppEngine, Microsoft Azure, Dropbox and so on. There are two obvious advantages to store data in Cloud Servers:

- 1) The data owners save themselves out from the trouble of buying extra storage servers and hiring server management engineers.
- 2) It is easier for the data owner to share their data with intended recipients when the data is stored in the cloud. Despite of the above advantages of cloud storage, there still remain various challenging obstacles, among which, the privacy and security of users' data have become two major issues. Traditionally, the data owner stores his/her data in the trusted servers, which are generally controlled by a fully trusted administrator. However, the cloud is usually maintained and managed by a semi-trusted third party (Cloud provider).

The high level architecture of the hybrid cloud storage system is illustrated in Fig. 1. In this architecture, the users who wish to share or access the data only interact with the public cloud; there is no access for public users to access the private cloud, which greatly reduces the attack surface for the private cloud.

As a result, traditional security storage technologies cannot be directly applied in the cloud storage scenario. While it is desirable for the data owner to share his/her private data with intended recipients, it presents an even more challenging problem since we have to make sure that except the intended recipients, nobody, including the cloud providers.

Cloud computing has developed an adoptable technology for several organizations which contain dynamic scalability and way in to virtualized resources being a service with the Internet [1]. Impair computing, as an emerging calculating paradigm, enable customers to remotely store their data into a cloud, so as to enjoy solutions on-demand.

## II. LITERATURE REVIEW

An overlay network is a virtual or logical network with addressable endpoints [12]. Overlays are frequently used to provide a routing topology not available in the underlying network. Encoding is the process in which data is converted into another form. Possible encoding applications include reduce of the file size (e.g., compression) or hiding data in other file formats to conceal the original content (e.g., steganography) [9]. Decoding is the reverse process to re-establish the encoded data to their original form. A credential is the verification of authority to access a given CS account. This can be achieved through providing a security handle, e.g., an OAuth [15] token with restricted access (time out) or a username/password pair with full access to that account.

### III. PROMINENT RESEARCH WORK

PiCsMu system presents benefits in terms of providing enlarged security and privacy: it include following steps - the file encryption ,file fragmentation process, compression, file decryption, defragmentation and pooled, add another layer of tasks to rebuild original files, thus, make it difficult for an attacker to get access to the content of original files. one more benefit is data idleness: multiple chunks in several CSs prevent data loss if a particular CS provider shuts down its services like.[21]. In addition storage space is obtainable with PiCsMu, since many CS that present free storage can be aggregated. The judgment of associated common Cloud storage services in Table I present six main characteristics, expresses the occurrence of the individual feature, while “-” indicate the need of it: “Overlay” explains the CS create a management network on top of another CSs. for that reason the CS does not store content data itself, but in an fundamental CS.

The PiCsMu System shows a distribute functionality, which uses a Peer-Peer network. Therefore, the Analyze of associated P2P file distribution/sharing systems is shows in Table.

The Scheduler should take the file size into consideration. Also, the Scheduler could make a decision which CS to receive, based on the recent performance of the CS in order to modify PiCsMu for the end user. In view of the fact that this improvement idealizes the storage of data, the retrieval time of data is not known in advance and could be predictable based on prior user behavior.

Here, paper does not reflect on any legal implications, such as limitations of Cloud storage services. As a result, the PiCsMu User duty is to decide about legal aspects, whether the uses of cloud storage overlay system is right use to the conditions of service and its officially authorized intension of CS providers. In addition such certified aspects will be explored in the future, together with views of different stakeholders and their benefit.

### IV. CLOUD STORAGE

A cluster of the cloud processing infrastructure can be transmit via a reliable info center services and construct dissimilar levels about the server virtualization technology, consisting associated with. It could be any place to bring in network infrastructure to make use of these services [9]. "Cloud" normally presents the computing requirements of users' just one access position.

Cloud storage system structure style consists of a number of following layers.

(1) Storage layer: It is the bulk part of the cloud storage. Fiber Channel storage devices could be IP NAS and storage

devices, etc., it can also be a SCSI or SAS storage devices such as DAS. Cloud storage is generally a enormous volume of storage devices and also the division of several different regions, each a range of other through vast area circle, Internet or FC Fiber Channel systems together.

(2) Basic management: Cloud-based storage management is the foundation component is stored in the cloud part, most hard to achieve. Based management through the clusters, grid computing technology, distributed file systems and cloud storage between various storage devices to work together, so that multiple storage devices can begin to offer the same service, and to provide superior and additional powerful better data access performance.Fig.3 is the basic management structure.

(3) Application interface layer: cloud storage request interface layer would be the most accommodating part. Different managing units can easily cloud the exact storage kind of business; create a different request service interface given by different purposes.

(4) Access layer: Any authorized user by the means of a standard application interface in order to log general public cloud storage system, delight in cloud storage space service. Through the user access layer, any authorized user can at any place, using a networked terminal device, according to the standard application interface to log public cloud storage platform, enjoy cloud storage service.

### V. PRAPOSED SYSTEM

Proposed System consists successive steps to aggregate cloud services and uploads files:

**File Fragmentation:** The major advantages of experiencing the fragmentation step are: (1) send file parts to several CSs worldwide, being managed within an overlay; (2) 1 entity (CS) hard try to reconstruct the whole file info, enabling an enlarged degree involving privacy; and (3) an fault correction program code (e. gary., Reed Solomon) could be applied considered for data redundancy.

Lower than replacement running the particular encoding step is that data could be stored anywhere, even if CSs demand file

Type restrictions. It enables the particular Aggregation involving CSs' safe-keeping

: All CSs keep data, in much the same, independently involving file type restrictions.

a).Upload Process

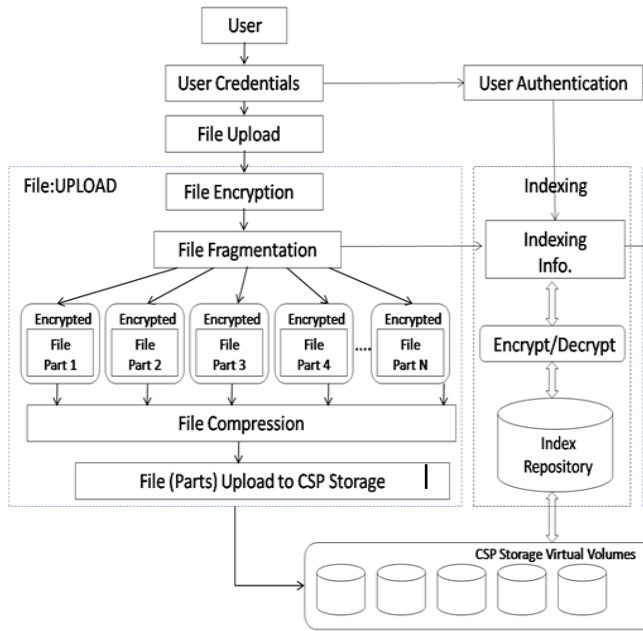


Figure 2.ProposedSystem

**Managing Index:** The index information, which holds the metadata about files, e.g., in which Cloud Service the file was stored, how the data was encrypted, how the file was split into several small chunks, and how the data was encoded into other file types

b).Download Process

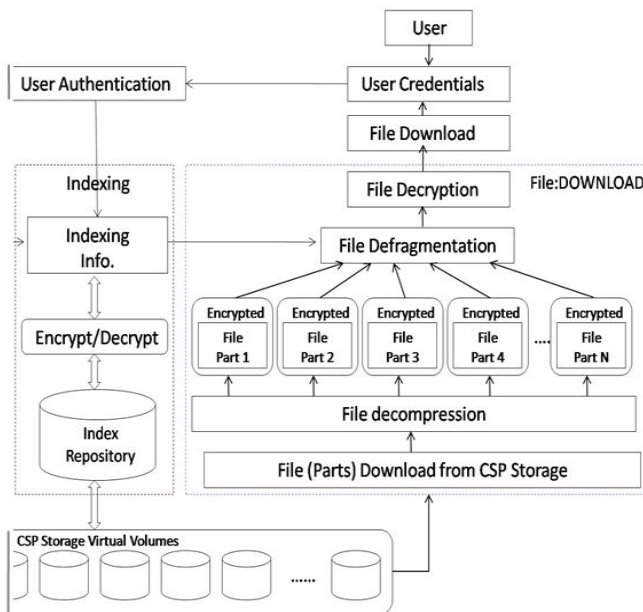


Figure.3

Feature	Generic Cloud Storage Services	SpiderOak	Wuala	Otixo	PiCsMu	Proposed System
Overlay	×	×	×	✓	✓	✓
Additional Service Support	×	×	×	✓	✓	✓
Client Side Fragmentation	×	×	×	×	×	✓
Server Side Fragmentation	×	×	×	×	✓	×
Built in Client Side Encryption	×	✓	✓	✓	✓	✓
Encoding	×	×	×	×	✓	✓
Centralized Index	×	×	×	×	×	✓
Attribute Access	×	×	×	×	×	✓

TABLE I: comparative study of the features and some cloud storage systems.

**Managing Index:** The index information, which holds the metadata about files, e.g., in which Cloud Service the file was stored, how the data was encrypted, how the file was split into several small chunks, and how the data was encoded into other file types.

**Data Uploading Process:** After manage index of file. Files are uploading on different cloud services like google drive, Amazon, Drop Box and sound cloud.

**Cloud Services for data storage:** Initial, user absolutely essential register CSs' references for his personal make use of. Assuming in which Google Picasa, Sound Cloud, Dropbox, and Facebook or MySpace credentials tend to be registered while using the Application; the fragmentation process has the capacity to calculate in to how many report parts your PDF X could be split good maximum upload size of every CS. In this specific use case the assumption is that your PDF Times is split into report parts. Users who wish to share or access the data only interact with the public cloud.

The Proposed System Index contained details of the file upload process outcome and all the parameters essential to situate and rebuild a file inside the Proposed System. The Proposed System Index contains three self-determining top-level entities: The File info, Credential Info, File Part Info. Only with all three entities the Proposed System Application can find all resultant file chunks and can rebuild the original file.

**VI. IMPELEMENTATION**

The design must be translated into the code that actually performs the task. It may take several iterations of the model to produce a working program. Implementation also affects the testing and maintenance of the developed system.

**Tools Used:**

**1.The .NET 2.0 Framework**

**a) The C# Language**

**b) Types of Files Used**

- An **assembly** provides a fundamental unit of physical code grouping.
- A **namespace** provides a fundamental unit of logical code grouping.

**2 ANEKA - Cloud Simulator**

Aneka permits servers and desktop PCs to be connected together to structure an effective computing infrastructure. Aneka is a workload distribution and administration stage that quickens applications in Microsoft .NET framework environments.

- a) Aneka System Requirements:** Aneka is built on Microsoft .Net Framework 2.0 and is capable of running on most Windows operating systems.
- b) Installing Aneka Cloud Management Studio:** Aneka installation begins with installing Aneka Cloud Management Studio
- c) Aneka Cloud Management Studio**
- d) Map Reduce Overview.**

**VII. RESULT**

TABLE II: Showing the statistical data about files after overall processing before uploading in comparison with the previous data estimated.

File	Size (byte)	Encryption Time (ms)	Fragmentation Time (ms)	Compression Time (ms)	Total Time (ms)	Previous Results*
F1	107380	468	475	1365	2308	2600
F2	114417	334	213	1165	1712	1900
F3	5565	226	43	1185	1454	1600
F4	167731	527	490	1355	2372	2200
F5	755712	409	351	1258	2018	2300
F6	8523	365	85	197	647	1500
F7	14823	769	190	1197	2156	2500
F8	85642	852	250	1201	2303	2800
F9	14786	345	185	1120	1650	1850

\*Estimated from work [2] by Ming Li,Shucheng Yu,Kui Ren,"Toward Privacy-Assured and Searchable Cloud Data Storage Services"

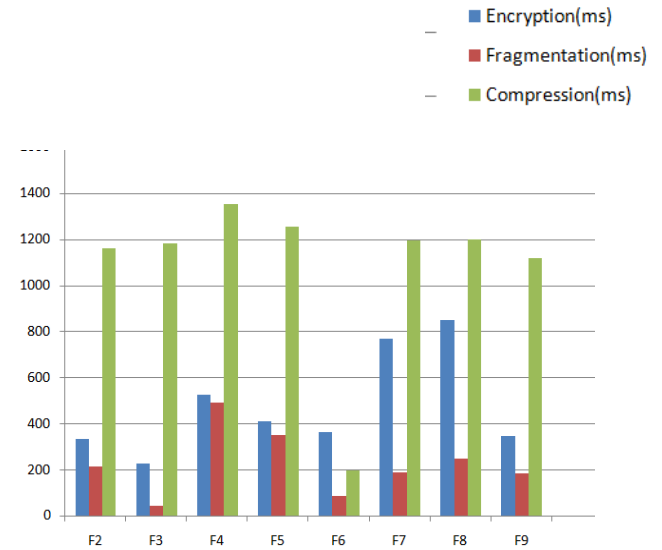


Figure.3: Files and the time taken in overall process before upload in ms.

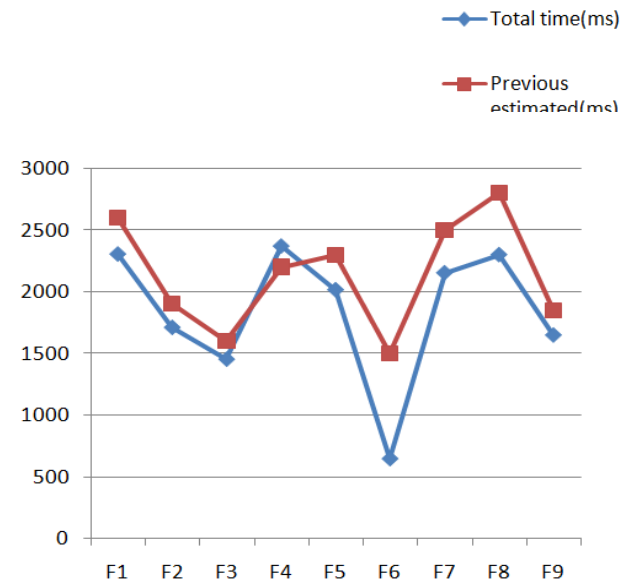


Figure.4: comparative graph between the statistical data in terms of the time (in ms)

**RESULTS EXTRACTIONS**

At the initial levels of the result analysis through values and graphical analysis the proposed approach is found

satisfactory, but there is scope of improvements in the approach which can become future research directions.

### VIII. CONCLUSION

A Sequential, secured and sharable data storage Approach for cloud services gives benefits in terms of enlarged security and confidentiality: File part encryption, file fragmentation processes and compression, pooled, adds another layer of tasks to rebuild original files, thus, spinning it even harder for an attacker to get access to the content of original files. Another benefit is data idleness: multiple fragments in many cloud services avoid data loss if a single CS provider shuts down its services. Furthermore, additional storage space is available with Platform-independent Cloud Storage System for Multiple Usage, since multiple CS that offer free storage can be aggregated

### IX. FUTURE WORKS

The proposed work is found satisfactory on the premise of statistics, yet there is always a scope of improvement. Our work concentrates on the information flow control from user to CSP yet not vice versa that can be new area of research later on for researchers. In future we can work on the verities of the data including more number of rules that can be utilized to satisfy the requirements of the user. Our work opens another area of research in security for cloud computing moreover any solid encryption policy for data in flight can likewise be incorporated to make the framework more secure.

### REFERENCES

- [1]. Guilherme Sperb Machado, Thomas Bocek, Michael Ammann, Burkhard Stiller "A Cloud Storage Overlay to Aggregate Heterogeneous Cloud Services" 38 Annual IEEE conference on local computer network 2013
- [2]. Ming Li, Utah State University Shucheng Yu, University of Arkansas at Little Rock Kui Ren, University at Buffalo Toward Privacy-Assured and Searchable Cloud Data Storage Services 2013 IEEE IEEE Network • July/August 2013
- [3]. Dejun Wang An Efficient Cloud Storage Model for Heterogeneous Cloud Infrastructures © 2011 Published by Elsevier Ltd.
- [4]. Guilherme Sperb Machado, Thomas Bocek, Michael Ammann, Burkhard Stiller "PiCsMu: A System to Aggregate Multiple Heterogeneous Cloud Services' Storage" 38 Annual IEEE conference on local computer network 2013
- [5]. Amazon.com Web Services: Products and Services. Available at: [aws.amazon.com/products/](http://aws.amazon.com/products/). Last visited on: March 2013.
- [6]. Dropbox: Dropbox Service. Available at: [dropbox.com](http://dropbox.com). March 2013.
- [7]. Google Corporate: Google Products and Solutions. Available at: <http://google.com/intl/en/about/products/>. Last visited at: March 2013.
- [8]. ID3 Website: ID3 Version 2 Standard. Available at: [id3.org](http://id3.org). May 2013.
- [9]. JSON-RPC Website Specification: A Light Weight Remote ProcedureCall Protocol, Specification 2.0. Available at: [jsonrpc.org](http://jsonrpc.org). April 2013.
- [10]. V. I. Levenshtein: Binary Codes Capable Of Correcting Deletions, Insertions And Reversals. Soviet Physics Doklady, Vol. 10, No. 8, February 1966, pp. 707-710.
- [11]. Microsoft: SkyDrive, Files Anywhere. <http://skydrive.com>. March 2013.
- [12]. OAuth Specification: OAuth 2.0 Specification. Available at: <http://oauth.net/2>. Last visited on: March 2013.
- [13]. Otixo: All Your Cloud Files from a Single Login. Available at: <http://otixo.com>. Last visited on: March 2013.
- [14]. PiCsMu Website: Platform-independent Cloud Storage System for Multiple Usage. Available at: <http://www.pics.mu>, May 2013.
- [15]. Salesforce.com: The Leader of Customer Relationship Management(CRM) and Cloud Computing. Available at: <http://www.salesforce.com>. Last visited on February 2010.
- [16]. Broberg J, Venugopal S, Buyya R. Market-oriented grids and utility computing: the state-of-the-art and future directions. Journal of Grid Computing 2008, 6(3):255-76.
- [17]. Open Grid Forum. Cloud Storage for Cloud Computing, Storage Networking Industry Association. <http://www.snia.org/cloud/CloudStorageForCloudComputing.pdf>. 2009.
- [18]. Erickson, J. S., Spence, S., Rhodes, M., Banks, D., Rutherford, J., Simpson, E., et al. Content-Centered Collaboration Spaces in the Cloud. IEEE Internet Computing, 2009, 13(5), 34-42.
- [19]. Grossman, R. L., Gu, Y. H., Sabala, M., & Zhang, W. Z.. Compute and storage clouds using wide area high performance networks. Future Generation Computer Systems-the International Journal of Grid Computing Theory Methods and Applications, 2009, 25(2), 179-183.
- [20]. Y. Deng, F. Wang, A heterogeneous storage grid enabled by grid service, SIGOPS Oper. Syst. Rev. 2007, 41 (1): 7-13.