

# A Survey on Searching Approaches on Issues in Cloud Based Environment

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**Abstract**— Cloud computing is a concept of outsourcing the storage and processing capabilities for storing and managing data and computer programs. With the appearance of cloud computing, it has turned out to be progressively prominent for the owners of data to make available their information to public cloud servers at the time of permitting data users to retrieve this information. For some privacy reasons, a secure search on encrypted cloud information has boosted some of the research works in the single owner model. Normally with information measure capability and restricted battery life, looking on encrypted information imposes serious overhead to computing and communication also as a better power consumption for mobile device users that makes the encrypted search over mobile cloud terribly difficult. The aim of the paper is to conduct a survey on efficient searching techniques on data in cloud environments.

**Keywords**— Cloud Computing, Cloud Storage, Mobile Cloud Storage (MCS), Cloud Searching, Keyword Search

## I. INTRODUCTION

Cloud computing is that the delivery of on-demand computing services from applications to storage and process power generally over the net and on a pay-as-you-go basis. One good thing about exploitation cloud computing services is that companies will avoid the direct price and complexity of owning and maintaining their own IT infrastructure, and instead merely obtain what they use, once they use it. The conception of computing-as-a-service has been around for a lot of, for much longer as way back because the Nineteen Sixties, once pc bureaus would enable corporations to rent time on a mainframe, instead of have to be compelled to obtain one themselves. These 'time-sharing' services were mostly overtaken by the increase of the computer that created owning a pc far cheaper, then by the increase of company knowledge centres wherever corporations would store immense amounts of knowledge [2].

Cloud storage can be a service model among the information is maintained, managed, saved remotely and created procurable to users over a network (typically the Internet). Users usually obtain their cloud knowledge storage on a per-consumption, monthly rate. Though the per-gigabyte price has been radically driven down, cloud storage suppliers have accessorial in operation expenses that may build the technology dearer than users bargained for. Cloud security continues to be a priority among users. suppliers have tried to influence those fears by building security capabilities, like cryptography and authentication, into their

services. There are three main cloud-based storage design models: public, non-public and hybrid.

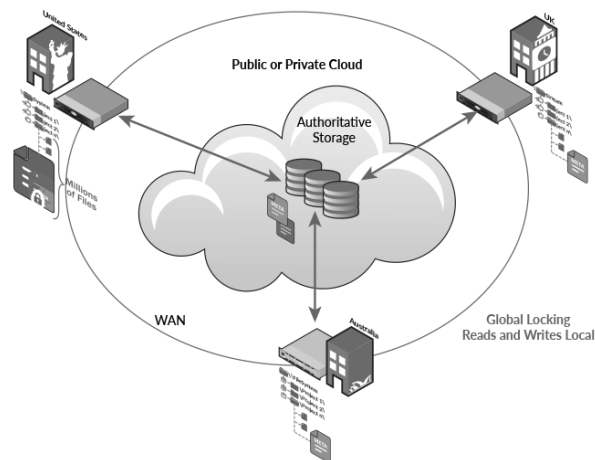


Figure.1 An overview of cloud storage

**Public Cloud:** Public cloud storage services give a multi-tenant storage setting that's most suited to unstructured .Data is keep in world knowledge centres with storage knowledge unfold across multiple regions or continents. Customers usually pay on a per-use basis almost like the utility payment model.

Private Cloud: It provides on-premises, storage services with an fanatical setting protected behind an organization's firewall. Non-public clouds are applicable for users WHO would like customization and a lot of management over their knowledge.

Hybrid Cloud: can be a combination of non-public cloud and third-party public cloud services with orchestration between the platforms for management. The model offers businesses flexibility and a lot of knowledge preparation choices. a corporation may, as an example, store actively used structured knowledge in an on-premises cloud, and unstructured and deposit knowledge in a very public cloud.

## II. ISSUES CLOUD COMPUTING

### A. Challenges in Cloud Computing

- Self-healing- just in case of application /network/data storage failure, there'll constantly be a reinforcement running while not major deferrals, making the asset change appear to be consistent to the client.
- SLA-driven - cloud is administrated by benefit level assertions that enables numerous examples of single application to be recreated on various servers if require emerges; dependent on a need subject, the cloud may limit or quit working a lower level application.
- Multi-tenancy - the cloud permits multiple shoppers to use constant hardware at constant time, whereas them knowing it, most likely inflicting conflicts of interest among customers. .
- Service-oriented - cloud permits one consumer to use multiple applications in making its own. .
- Virtualized - applications don't seem to be hardware specific; varied programs might run on one machine victimization virtualization or several machines might run one program.
- Linearly climbable - cloud should deal with an ascent in preparing directly; if "n" times a ton of clients need an asset, an opportunity to complete the demand with "n" a considerable measure of assets should be generally steady.
- Data management - distribution, partitioning, security and synchronization of information.

### B. Security problems In Cloud based mostly Search

- There are seven problems that require being self-addressed before enterprises take into account change to the cloud computing model. they're as follows:
- Privileged user access - data transmitted from the consumer through the web poses a precise degree of risk, due to problems with knowledge ownership; enterprises ought to pay time attending to understand their suppliers and their laws the maximum amount as attainable before distribution of some trivial applications.

- Regulatory compliance - shoppers are in control of the safety of their answer, as they'll choose from suppliers that enable to be audited by third party organizations that check levels of security and suppliers that don't.
- Data location - betting on contracts, some shoppers may ne'er understand what country or what jurisdiction their knowledge is found.
- Data segregation - encrypted data from multiple corporations could also be hold on constant disc, thus a mechanism to separate knowledge ought to be deployed by the supplier.
- Recovery - each supplier ought to have a disaster recovery protocol to safeguard user knowledge.
- Investigative support - if a customer presumes defective movement from the provider, it will not have a few legitimate manners by which seek after AN examination.
- Long-term viability - alludes to the adaptability to withdraw an agreement and each one learning if the present provider is purchased out by another firm gave that not the greater part of the over must be constrained to be enhanced wagering on the current applying, it's as yet preponderating that understanding is come to on the issues concerning institutionalization.

## III. SEARCH PROCESS IN CLOUD

Mobile Cloud Storage (MCS) allows the mobile device users to store and retrieve files or knowledge on the cloud through wireless communication that improves the info convenience and facilitates the file sharing method while not debilitating the native mobile device resources. Historically, two classes of encrypted search strategies exist that may change the cloud server to perform the search over the encrypted data:

- Ranked based keyword search
- Boolean based keyword search.

The hierarchical keyword search adopts the connectedness scores to represent the connectedness of a file to the searched keyword and sends the best k significant documents to the purchaser. it's extra proper for distributed storage than the Boolean catchphrase seek approaches, since Boolean watchword look approaches got the opportunity to send all the coordinating records to the customers, and along these lines bring about a greater amount of system activity and a heavier post-handling overhead for the cell phones..

A keyword is form of just like the Platonic ideal of a quest question; it's associate in nursing abstraction that we tend to extrapolate from multiple search queries.

A search question or search term is that the actual word or string of words that a quest engine user varieties into the search box.

- In SEO, we tend to focus on these reflections by upgrading on-page (utilizing the watchwords in URLs,

title labels, body duplicate, picture document names, meta portrayals so on), by building internal connections with catchphrases inside the stay , and so forth.

- In PPC, we tend to target keywords by bidding on them and victimization them in our ads and landing pages.
- Search queries, on the opposite hand, are the real-world terms that folks use to seek out those pages through search]. There are unit two styles of keyword search:
  1. Multi-keyword search is once a page ranks for multiple variations of same keyword. Considering the big variety of information users and documents within the cloud, it's necessary to permit multiple keywords within the search request and come back documents within the order of their connectedness to those keywords.
  2. Single-Keyword search is once a page ranks for precisely one term and not its variations

#### IV. LITREATURE SURVEY

This method implements a secure, economical moreover as dynamic search system, that supports the correct multi-keyword stratified search moreover because the dynamic erasure moreover as injection of documents. They additionally developed a crucial keyword balanced binary tree because the index, moreover as enforced a "Greedy Depth-first Search" formula to urge sensible potency than linear search [1].

Another method planned an efficient technique that solves the difficulty of synonym-based multi-keyword stratified search on cloud information that is encrypted. they need worked on two facts: synonym-based search moreover as similarity stratified search. The outcomes of finding may be accomplished once approved cloud shoppers input the equivalent words of the predefined keywords, not same or fuzzy matching keywords, because of the conceivable synonym substitution and/or her absence of precise data concerning the knowledge. Authors likewise gave two secure frameworks to deal with privacy problems in two threat models [2].

In this method authors have boosted to present the solution to the difficulty of stratified keyword search over encrypted information remotely hold on in cloud server. Authors created use of the uneven encoding technique within the place of the normal cruciform encoding, the IBE of Boneh Franklin technique. Additionally the transformational TF-IDF makes stratified search possible that the users could extract these most vital files rather than files perhaps simply contain the keyword moreover as has no important relationship with the keyword [3].

This method arranged usage of the encoding and cryptography, secure list development is with progress finished with intriguing execution. at the point when list development it'll get packed and can be hang on in .CFS record organize. When terminating single-watchword question, client can get all records that contain the required catchphrase. the advantages square measure ensures data security by scrambling archives before outsourcing, rank essentially based recovery of the records, to just access the encoded data by multi catchphrase rank pursuit abuse watchword file. The Disadvantages of the arranged framework square measure single-catchphrase seek while not positioning, Boolean watchword looking while not positioning, single-catchphrase seek with positioning, only from time to time arranging of the outcomes i.e. no record creation and positioning, Single User look [4].

This method arranged a protected, sparing and dynamic pursuit topic, that backings not exclusively the right multi keyword stratified hunt anyway furthermore the dynamic cancellation and addition of records. They build an extraordinary watchword adjusted twofold tree in light of the fact that the file, and arranged an "Avaricious Depth-first Search" recipe to get higher strength than direct hunt. Furthermore, the parallel pursuit technique might be dole out to extra reduce the time cost. the wellbeing of the subject is ensured against 2 danger models by misuse the protected KNN equation. Exploratory outcomes show the intensity of arranged subject. the advantages of the arranged framework square measure accessible encoding topics change the shopper to store the scrambled data to the cloud and execute catchphrase seek over figure space and a protected tree-based hunt plot over the encoded cloud data, that backings multi-watchword stratified pursuit and dynamic task on the record combination. The inconveniences square measure the cloud benefit providers that keep the data for clients could get to clients delicate data while not approval. A general way to deal with shield the data privacy is to figure the information before outsourcing. Nonetheless, this may cause a substantial cost regarding data ease of use [5].

**Table no 1: Comparison between features and findings**

S.no	Type of Search	Algorithm Used	Findings
1	Multi Keyword	Greedy Depth First Search	Using Depth First Search has more efficiency than Linear Search
2	Multi Keyword	Synonym based Fuzzy Searching algorithm	The algorithm provided more precise searching over other traditional searching algorithm
3	Single Keyword	TF-IDF based searching	Searching files which have precise relationship with the keyword.
4	Multi keyword	Multi-keyword	Ranking approach

		based ranking algorithm	improved the data retrieval by returning only matching keyword data
5	Multi keyword	Parallel Greedy Depth First Search	Improves the data retrieval time and accuracy.

## V. CONCLUSION AND FUTURE SCOPE

Developing techniques for efficiently searching data and files on cloud environment has gained a lot of momentum in recent years. With ever increasing need for maintaining large amount of data and due to limited local storage, the information privacy problem is paramount in cloud storage device, so the sensitive data is encrypted with the aid of the owner earlier than outsourcing onto the cloud. Mobile cloud storage machine incurs new challenges over the conventional encrypted seek schemes. Future work is to develop an efficient multi keyword searching scheme using improved Order Preserving Encryption technique for searching data on cloud.

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