ISSN(Online): 2320-9801
ISSN (Print) : 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: www.ijircce.com

Vol. 6, Issue 11, November 2018

Fast Phrase Search for Encrypted Cloud Storage

Varsha Pawar[1], Pooja Pawar[1], Shalaka Shewale[1], Shrutika Vairal[1], A. P. Tikar[2]

B.E Students, Department of Computer Science Engineering, NBN Sinhgad School of Engineering, Ambegaon(Bk), Pune, India[1]

Professor, Department of Computer Science Engineering, NBN Sinhgad School of Engineering, Ambegaon(Bk), Pune, India[2]

ABSTRACT: With the development of cloud storage, more data owners are inclined to outsource their data to cloud services. For privacy concerns, sensitive data should be encrypted before outsourcing. The storage and access of confidential documents have been identified as one of the important problems in the area. In particular,many researchers investigated solutions to search over encrypted documents stored on remote cloud servers. While many schemes have been proposed to perform conjunctive keyword search, less attention has been noted on more specialized searching techniques. In this paper, present a phrase search technique based on Bloom filters that is significantly faster than existing solutions, with similar or better storage and communication cost. Technique uses a series of n-gram filters to support the functionality.

KEYWORDS: Cloud storage, Conjunctive keyword search, Phrase search, Privacy, Security, Encryption.

I.INTRODUCTION

I.I. Background:

Cloud storage enables large, scalable, and on demand network access to a shared pool of digital data resources. Companies store their personal data to the cloud server, and utilize query services to easily access data anytime, anywhere and on any device. The cloud is designed to hold a large number of encrypted documents. With the advent of cloud computing, growing number of clients and leading organizations have started adapting to the private storage outsourcing. This allows resource constrained clients to privately store large amounts of encrypted data in cloud at low cost. However, this prevents one from searching.

I.II.MOTIVATION :

On web large number of documents is stored in a cloud server, searching against a keyword will result into large number of documents, not related to topic. This motivates the idea of searching against a string, which allows the search to be more specific. Proposed on one of the earliest works on keyword searching, their scheme uses public key encryption to allow keywords to be searchable without revealing data content. Waters et al. investigated the problem for searching over encrypted audit logs. Many of the early works focused on single keyword searches. Other interesting problems, such as the ranking of search results, so here need is search conjunctive keyword.

II. REVIEW OF LITERATURE

1. D. Boneh, G. D. Crescenzo, R. Ostrovsky, and G. Persiano, “Public key encryption with keyword search”. Describe an approach for constructing searchable encrypted audit logs which can be combined with any number of existing approaches for creating tamper-resistant logs.Implemented an audit log for database

ISSN(Online): 2320-9801
ISSN (Print) : 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: www.ijircce.com

Vol. 6, Issue 11, November 2018

queries that uses hash chains for integrity protection and identity- based encryption with extracted keywords to enable searching on the encrypted log.

2. Hoi Ting Poon and Ali Miri "A low storage phrase search scheme based on bloom filters for encrypted cloud services."Propose a phrase search scheme, which takes advantage of the space efficiency of Bloom filters, for applications requiring a low storage cost.

3. S. Ruj, M. Stojmenovic, and A. Nayak, "Privacy preserving access control with authentication for securing data in clouds." Propose a new privacy preserving authenticated access control scheme for securing data in clouds. In the proposed scheme, the cloud verifies the authenticity of the user without knowing the user's identity before storing information.

4. H. Tuo and M. Wenping, "An effective fuzzy keyword search scheme in cloud computing."Investigate the issue on fuzzy search over cloud data, then by using technique of filter, it improve a efficient keyword search scheme to achieve fuzzy searching with low cost, which is suit for practical cloud computing.

5. Z. Fu, X. Sun, N. Linge, and L. Zhou, "Achieving effective cloud search services: multi-keyword ranked search over encrypted cloud data supporting synonym query." Proposes an effective approach to solve the problem of multi-keyword ranked search over encrypted cloud data supporting synonym queriesperformed to validate the approach, showing that the proposed solution is very effective and efficient for multi- keyword ranked searching in a cloud environment.

6. Michel Abdalla, Mihir Bellare, Dario Catalano, Eike Kiltz, Tadayoshi Kohno, Tanja Lange, John Malone-Lee, Gregory Neven, Pascal Paillier, and Haixia Shi. "Searchable Encryption Revisited Consistency Transform." Of an anonymous identity-based encryption (IBE) scheme to a secure PEKS scheme that, unlike the previous one, guarantees consistency. Finally, we suggest three extensions of the basic notions considered here, namely anonymous hi-erarchical identity-based encryption, public-key encryption with temporary keyword search, and identity-based encryption with keyword search.

7. Mihir Bellare, Alexandra Boldyreva, and Adam ONeill. "Deterministic and Efficiently Searchable Encryption." One of our constructs, called RSA-DOAEP, has the added featureof being length preserving, so that it is the first example of a public-key cipher. We generalize this to obtain a notion of efficiently-searchable encryption schemes which permit more flexible privacy to search-time trade-offs via a technique called bucketization.

8. Dan Boneh, Giovanni Di Crescenzo, Rafail Ostrovsky, and Giuseppe Persiano "Public Key Encryption With Keyword Search." Proposed the method that will find weather message contain specific keyword or not.

9. Ning Cao, Cong Wang, Ming Li, Kui Ren, and Wenjing Lou."Privacy-Preserving Multi-Keyword Ranked Search Over Encrypted Cloud Data."Solve the challenging problem of privacy-preserving multi-keyword ranked search over encrypted data in cloud computing .It ranks the document according to matching result.

10. David Cash, Joseph Jaeger, Stanislaw Jarecki, Charanjit S Jutla, Hugo Krawczyk, Marcel-Catalin Rosu, and Michael Steiner." Dynamic Searchable Encryption in Very-Large Databases" single-keyword searches and offers asymptotically optimal server index size, fully parallel searching, and minimal leakage. Our implementation effort brought several factors that are ignored by earlier coarse-grained theoretical performance analyses, including low-level space utilization, I/O parallelism and good put.

ISSN(Online): 2320-9801
ISSN (Print) : 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: www.ijircce.com

Vol. 6, Issue 11, November 2018

III. SYSTEM ARCHITECTURE

PROPOSED SYSTEM ARCHITECTURE:

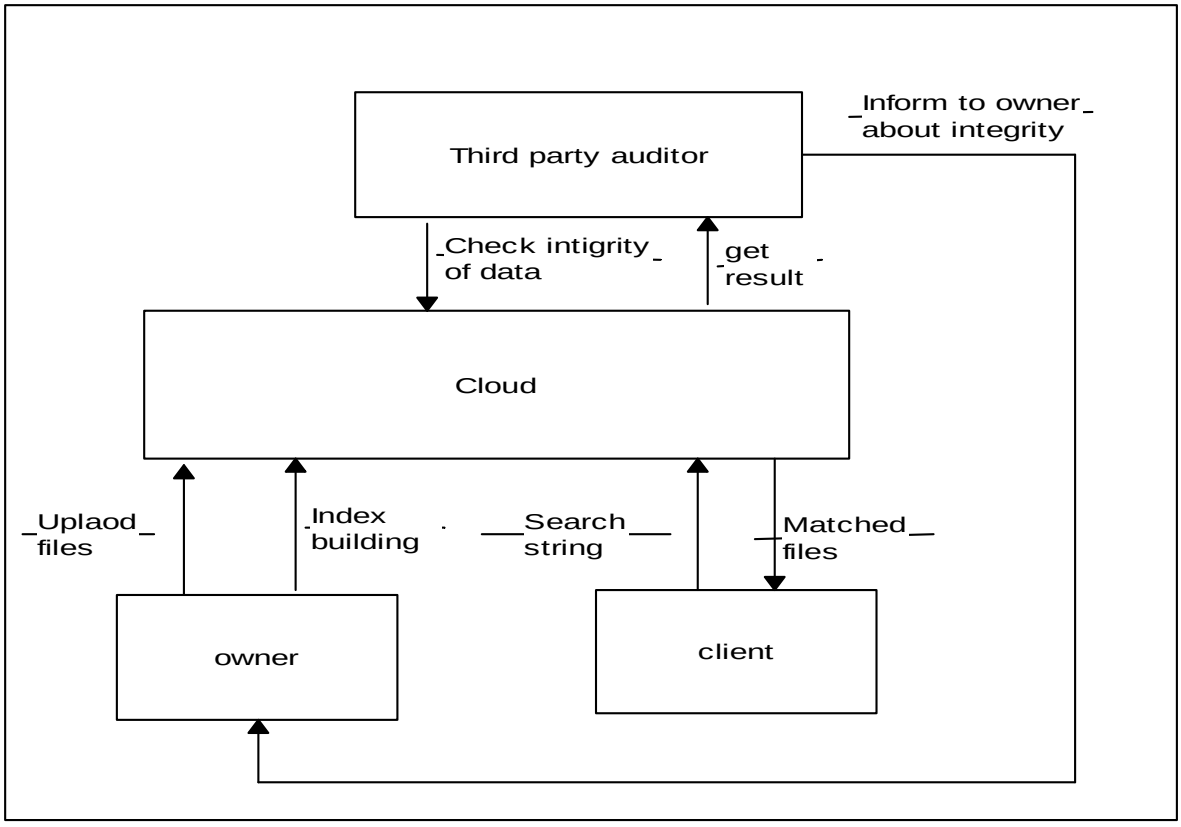


Fig.1: System architecture

System Overview:
Proposed system will provide security to data. Present a phrase search technique based on Bloom filters that is significantly faster than existing solutions, with similar or better storage and communication cost. Our technique uses a series of n-gram filters to support the functionality. In proposed system computing model, entities are involved such as data owners, data users, cloud server and TPA.Data owners have collection of files. Data owners upload the files, then bloom filter will build. Data owners encrypt files and outsource encrypted files to cloud server. When data client wants to search over files from cloud server, he enters string to search. System will give matched files. Then client send request for decryption key, client will get that on mail. If key matches then only file will download to client. Then client have to enter key, then data client download files and decrypts these files. Third party auditor check integrity of data and inform to owner.

ADVANTAGES-

1. It provides searching in way proposed string search not only looks for those keywords, but also consider the order.
2. Provide multi keyword searching in secure way.

ISSN(Online): 2320-9801
ISSN (Print) : 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: www.ijircce.com

Vol. 6, Issue 11, November 2018

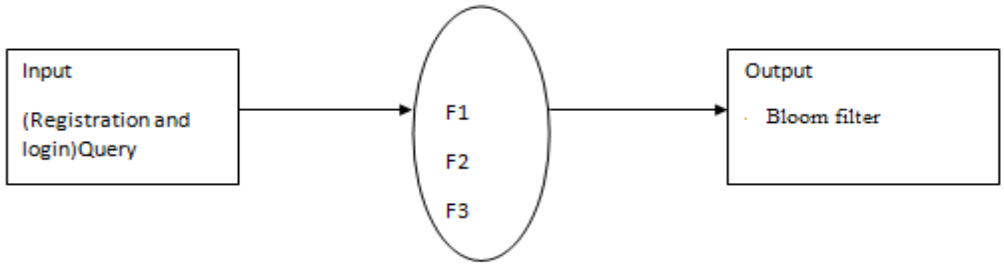
IV. MATHEMATICAL MODEL

Set Theory:
Let us consider S as a system for automatically find best resources.
S= {……
INPUT:

- Identify the inputs

F= {f_1, f_2, f_3 ……, f_n| 'F' as set of functions to execute commands.}
I= {i_1, i_2, i_3…|'I' sets of inputs to the function set }
O= {o_1, o_2, o_3….|'O' Set of outputs from the function sets,}
S= {I, F, O}
I = {Query submitted by the user, i.e. Enter keyword}
O = {Output of desired query, i.e. Matched files}
F = {Functions implemented to get the output, i.e. Bloom filter}

Mapping diagram



V.CONCLUSION

Proposed system propose a novel secure search presented a phrase search scheme based on Bloom filter that is significantly faster than existing approaches, requiring only a single round of communication and Bloom filter verifications. The solution addresses the high computational cost noted in by reformulating phrase search. The technique of constructing a Bloom filter index enables fast verification of Bloom filters in the same manner as indexing. The proposed solution can also be adjusted to achieve maximum speed or high speed with a reasonable storage cost depending on the application.

REFERENCES

1. D. Boneh, G. D. Crescenzo, R. Ostrovsky, and G. Persiano, "Public key encryption with keyword search," in In proceedings of Eurocrypt, 2004, pp. 506–522.
2. Hoi Ting Poon and Ali Miri "A low storage phrase search scheme based on bloom filters for encrypted cloud services," to appear in IEEE International Conference on Cyber Security and Cloud Computing, 2015.
3. S. Ruj, M. Stojmenovic, and A. Nayak, "Privacy preserving access control with authentication for securing data in clouds," in Proceedings of the 2012 12th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing, 2012, pp. 556–563.
4. H. Tuo and M. Wenping, "An effective fuzzy keyword search scheme in cloud computing," in International Conference on Intelligent Networking and Collaborative Systems, 2013, pp. 786–789.
5. Z. Fu, X. Sun, N. Linge, and L. Zhou, "Achieving effective cloud search services: multi-keyword ranked search over encryptedcloud data supporting synonym query," IEEE Transactions on Consumer Electronics, vol. 60, pp. 164–172, 2014.
6.Michel Abdalla, Mihir Bellare, Dario Catalano, Eike Kiltz, Tadayoshi Kohno, Tanja Lange, John Malone-Lee, Gregory Neven, Pascal Paillier, and Haixia Shi. Searchable Encryption Revisited: Consistency Properties, Relation to Anonymous IBE, and Extensions. volume 21, pages 350–391. Springer, 2008.
7.Mihir Bellare, Alexandra Boldyreva, and Adam ONeill. Deterministic and Efficiently Searchable Encryption. In Annual International Cryptology Conference, pages 535–552. Springer, 2007.

ISSN(Online): 2320-9801
ISSN (Print) : 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: www.ijircce.com

Vol. 6, Issue 11, November 2018

8. Dan Boneh, Giovanni Di Crescenzo, Rafail Ostrovsky, and Giuseppe Persiano. Public Key Encryption With Keyword Search. In International Conference on the Theory and Applications of Cryptographic Techniques, pages 506–522. Springer, 2004.
9. Ning Cao, Cong Wang, Ming Li, Kui Ren, and Wenjing Lou. Privacy- Preserving Multi-Keyword Ranked Search Over Encrypted Cloud Data. volume 25, pages 222–233. IEEE, 2014.
10.David Cash, Joseph Jaeger, Stanislaw Jarecki, Charanjit S Jutla, Hugo Krawczyk, Marcel-Catalin Rosu, and Michael Steiner. Dynamic Searchable Encryption in Very-Large Databases: Data Structures and Implementation. volume 2014, page 853. Citeseer, 2014.