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Privacy-Preserving Media Sharing with Scalable Access Control and Secure Deduplication in Cloud Computing

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Abstract: *To save cloud storage, secure drag-down algorithms have been developed. To get started, we will go through the AES encryption algorithm, which encrypts messages using a message-based key. As a result, the same clear texts produce the same ciphertexts. AES, which incorporates flexible encryption and provides accurate security definitions, was proposed. Cloud computing is the development of sharing large amounts of data over a network. There are many ways to provide data security in the cloud. Current methods, on the other hand, are closely related to ciphertext. Therefore, in this paper, we propose cloud-based information collection, sharing, and a limited distribution system that maintains the privacy of many owners. Here, the data owner can safely share confidential information with a group of customers using the cloud.*

Keywords: Safe Deduplication Algorithms, etc.

I. INTRODUCTION

It is a network-based computer system with a large storage area where authorised users can access the platform from anywhere and at any time using good internet or network connectivity. Secure deduplication solutions have been proposed to preserve cloud storage space due to the increasing development of media content. First, the AES encryption system was established, which uses a message-derived key in order to encrypt the message as a result, identical plaintexts generate similar ciphertexts. AES was proposed, which encompasses convergent encryption and provides thorough security. definitions. it is the advancement of sharing large amounts of data through a network. There are numerous methods for delivering information. Data security in the cloud Current approaches, on the other hand, are more closely tied to the cipher text. As a result, we propose that information be gathered, shared, and distributed in a controlled manner. In the cloud, create a plan that protects the privacy of several owners. The data owner can share this information here to share and store securely.

II. LITERATURE SURVEY

Qinlong Huang, Member, Zhicheng Zhang, and Yixian Yang, "Privacy-Preserving Media Sharing with Scalable Access Control and Secure Deduplication in Mobile Cloud Computing." [1] A large number of media assets, such as videos, are shared in mobile networks thanks to cloud computing and mobile devices. Although scalable video coding can help with adaptability, the cloud poses a severe danger to media privacy. We offer a privacy-preserving method in this research. In mobile cloud computing, SMACD is a multi-dimensional media sharing mechanism. To begin, each media layer is encrypted with an access policy based on attribute-based encryption, which ensures media confidentiality and fine-grained access control. control of access Then we show how to build a multi-level access policy with secrets. scheme of sharing It ensures that mobile users who obtain a media layer do it in a safe and secure manner. The access trees of its child layers at the lower access level must be satisfied by a higher access level, which is compatible with the characteristics of multi- dimensional media. It also makes access policies less complicated. We also propose decentralised key servers to achieve both of these goals.

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Di Zhang, Junqing Le, Nankun Mu, Jiahui Wu, Xiaofeng Liao," Secure and Efficient Data Deduplication in JointCloud Storage." [2] - Data deduplication can effectively remove data redundancies in cloud storage while also lowering users' bandwidth requirements. However, most previous systems that rely on the assistance of a trustworthy key server (KS) are vulnerable and limited due to information leakage, low attack resistance, high computational cost, and other issues. When the trustworthy KS fails, the entire system fails, resulting in single- point-of-failure. We propose a Secure and Efficient data Deduplication strategy (called SED) in a Joint Cloud storage system that provides worldwide services through collaboration with various clouds in this study. SED can also update and share dynamic data without relying on the trusted KS. Furthermore, SED can avoid the single-point-of-failure problem that plagues traditional cloud storage systems. According to theoretical assessments, our SED ensures semantic security in the random oracle model and has significant anti-attack capabilities, such as brute-force attack resistance and a strong anti-hacking capability. resistance to collusion attacks Furthermore, with low computing complexity, connectivity, and storage overhead, SED can effectively eliminate data redundancies. Client-side usability is improved by SED's efficiency and functionality. Finally, the comparison findings reveal that our strategy outperforms the competition.

Zahra Pooranian; Mohammad Shojafar; Sahil Garg; Rahim Taheri; Rahim Tafazolli," Secure Deduplicated Cloud Storage with Encrypted Two-Party Interactions in Cyber--Physical Systems" [3] In cloud computing, cloud envisioned cyber- physical systems (CCPS) is a practical technology that relies on the interaction of cyber elements such as mobile users to transport data. Cloud storage uses data deduplication techniques to save space and bandwidth for real-time services in CCPS. Data deduplication is used in this architecture to reduce duplicate data and improve the speed of the CCPS application. It does, however, pose security and privacy problems. For example, data deduplication is incompatible with encryption from several users using separate keys. Several types of research have been conducted in this area. Despite this, they are lacking in terms of security, performance, and adaptability. To reconcile the encryption and data deduplication, we propose a message lock encryption with never-decrypt homomorphic encryption (LEVER) protocol between the uploading CCPS user and cloud storage in this paper. LEVER is the first encrypted deduplication system that is resistant to brute-force attacks.

Xue Yang, Rongxing Lu, Jun Shao, Xiaohu Tang, "Achieving Efficient Secure Deduplication with User-Defined Access Control in Cloud "[4] One of the most important services of cloud computing is cloud storage, which allows cloud users to outsource their data to the cloud for storage and sharing with authorised users. Secure deduplication has been actively researched in cloud storage because it may minimise redundancy over encrypted data, reducing storage space and communication overhead.
Many existing secure deduplication systems aim to achieve the following features in terms of security and privacy: data secrecy, tag consistency, access control, and resistance to brute-force attacks. However, none of them, as far as we know, can meet all four requirements at the same time. To address this limitation, we present an efficient safe deduplication approach with user-defined access control in this paper. Specifically, by permitting only the cloud service provider to authorise data access on behalf of data owners, our system may reduce duplicates to the greatest extent possible without jeopardising cloud users' security and privacy.

Haoran Yuan, Xiaofeng Chen, "Secure Cloud Data Deduplication with Efficient Re-encryption" [5] Commercial cloud storage providers have widely implemented data deduplication techniques, which is both significant and required in dealing with the increasing expansion of data. Many secure data deduplication algorithms have been created and implemented in various contexts to further protect the security of users' sensitive data in the outsourced storage mode. Numerous scholars have focused on secure and efficient re-encryption for encrypted data deduplication, and many methods have been developed to facilitate dynamic ownership management.

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We focus on the re-encryption deduplication storage system in this research, and we show that the recently designed lightweight rekeying-aware encrypted deduplication scheme (REED) is vulnerable to a stub-reserved Attack.

Shunrong Jiang, Tao Jiang and Liangmin Wang," Secure and Efficient Cloud Data Deduplication with Ownership Management "[7] Data deduplication is a technique for reducing storage space and communication overhead in cloud storage by removing redundant data and storing only one duplicate of it. The convergent encryption system and many of its variants are offered for secure data deduplication. However, most of these solutions ignore or are unable to solve both dynamic ownership changes and secure Proof-of-Ownership (PoW) at the same time.
In this paper, we offer a safe data deduplication strategy for dynamic ownership management that uses an efficient PoW process. Our approach, in particular, provides data deduplication at the file and block level for both cross-user and intra-user users. We create a novel PoW scheme during file- level deduplication to ensure tag consistency and achieve mutual ownership verification. Furthermore, in order to accomplish efficient ownership management, we devise a lazy updating technique.

Yuan Zhang, Yunlong Mao, "Towards Thwarting Template Side-channel Attacks in Secure Cloud Deduplications" [8] Deduplication is one of a few essential cloud storage technologies that helps cloud servers to reduce storage space by eliminating redundant file copies. It does, however, frequently leak side channel information about whether or not an uploading file is deduplicated. Adversaries can easily launch a template side-channel attack using this information, substantially harming cloud customers' privacy. We use the k- anonymity privacy principle to create secure threshold deduplication techniques to counter this type of attack. We developed a new cryptographic primitive termed "dispersed convergent encryption" (DCE) scheme and suggested two distinct implementations.

Jianbing Ni, Student Member, Kuan Zhang," Providing Task Allocation and Secure Deduplication for Mobile Crowdsensing via Fog Computing "[9] Mobile crowdsensing allows a group of people to collect data for a specific consumer using their mobile devices in a cooperative manner. The success of mobile crowdsensing is largely determined by the number of people who participate. The more people who participate, the more sensor data is acquired; nevertheless, the more replication data is generated, which adds extra communication overhead.
As a result, data deduplication, also known as data elimination, is crucial for improving communication efficiency. Unfortunately, sensing data is frequently encrypted, making deduplication difficult. In this paper, we present a fog-assisted mobile crowdsensing framework for enhancing task assignment accuracy by allowing fog nodes to allocate tasks depending on user mobility.

Shuguang Zhang, "Secure Encrypted Data Deduplication with Dynamic Ownership Updating" [10] Deduplication eliminates duplicate data copies and lowers cloud service provider storage costs. Deduplication of encrypted data, on the other hand, is challenging. Current systems rely significantly on trustworthy third parties and fail to account for data's popularity, resulting in insufficient security and efficiency.
A data deduplication system based on data popularity that is secure and encrypted is proposed. To determine whether different encrypted data originate from the same plaintext, check tags are calculated using bilinear mapping. To safeguard the tags, ciphertext policy attribute-based encryption is used.

III. PROBLEM STATEMENT

We use the AES algorithm for encryption and decryption in the suggested system, as well as data security and secure access management. To avoid data duplication, the MD 5 algorithm should be used.

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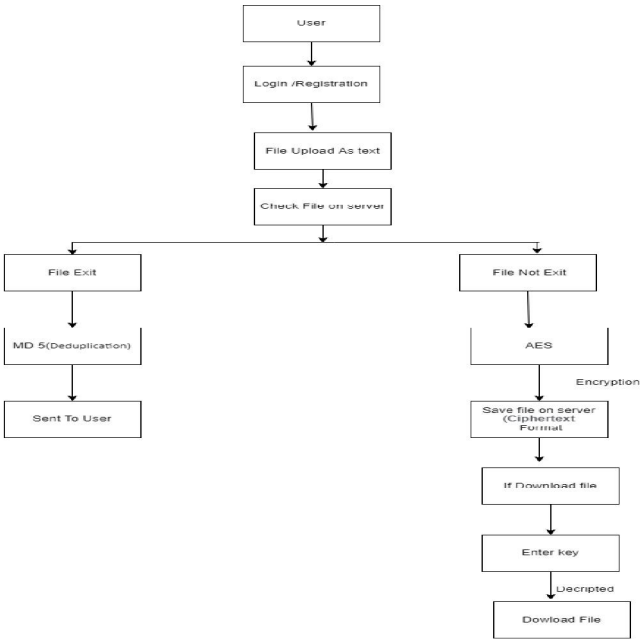
3.1 System Architecture



IV. ALGORITHM

AES is a symmetrical block cypher method that accepts plain text in 128-bit blocks and turns it to ciphertext using keys of 128, 192, and 256 bits. The AES algorithm is a worldwide standard because it is considered secure. The Advanced Encryption Standard (AES) is a symmetric block cypher that the United States government has chosen to safeguard confidential information.

AES is used to encrypt sensitive data in software and hardware all over the world. It's critical for government computer security, cybersecurity, and data security.

MD5: The MD5 message-digest technique produces a 128-bit hash value and is cryptographically broken but still frequently used. Although MD5 was created with the intention of being used as a cryptographic hash function, it has been discovered to have numerous flaws. Java is an object-oriented programming language with a high level of abstraction and as few implementation dependencies as possible.

Java applications are usually compiled to bytecode, which may execute on any Java virtual machine, regardless of the computer architecture.

Figure: Home Page

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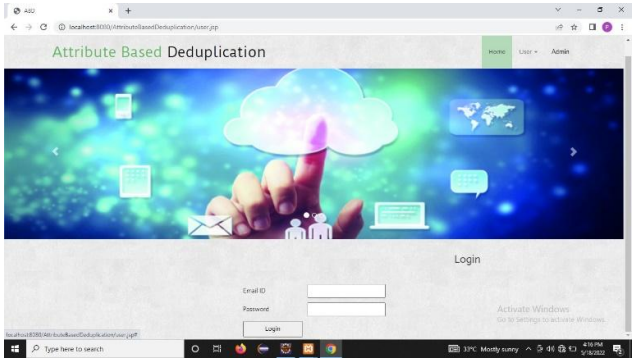

Figure: User Login Page

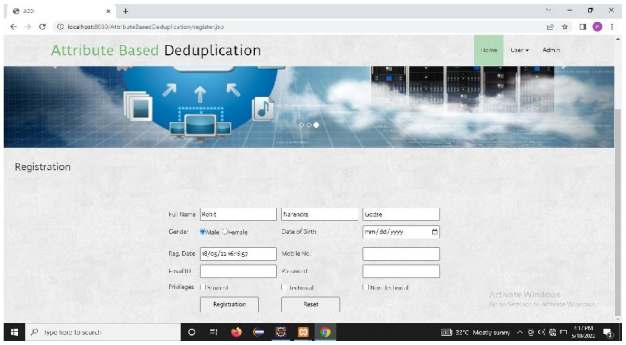

Figure: User Registration Page

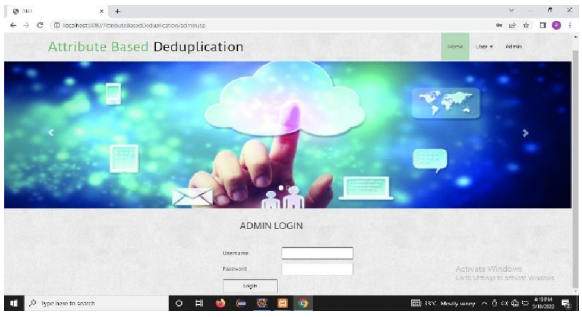

Figure: Admin Login

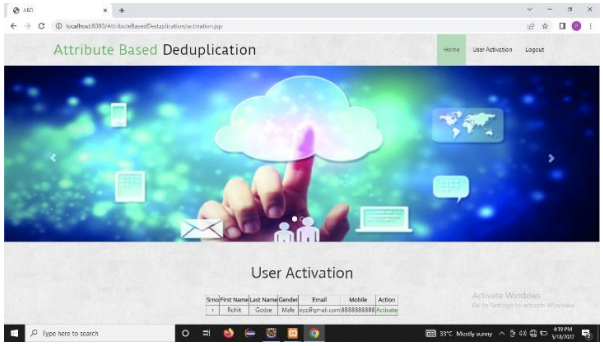

Figure: User Activation Page

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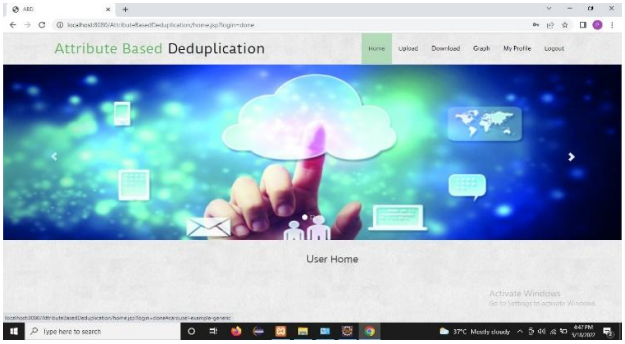

Figure: User Home Page

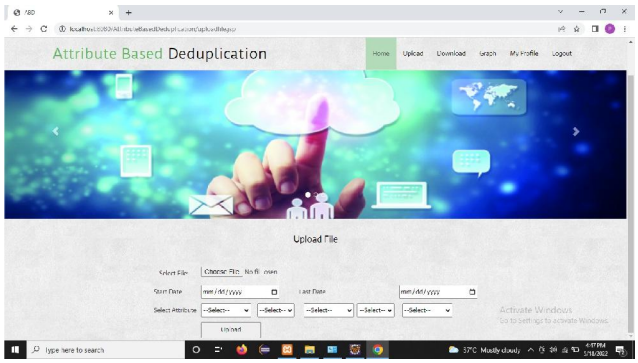

Figure: Upload File

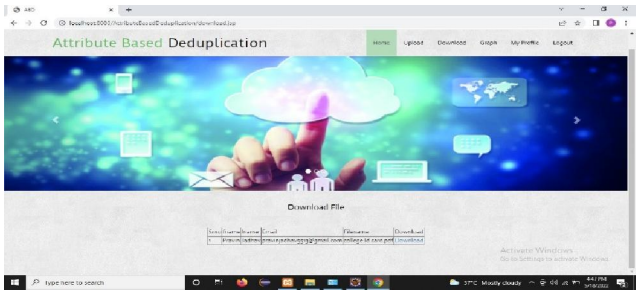

Figure: Download File

V. CONCLUSION

We avoid deduplication and save files securely in this project. Deduplication is a useful approach for conserving storage space and network traffic by removing duplicate copies of the same data. Also, for encryption and decryption, we use the AES algorithm.

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