International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 07 Issue: 04 | April - 2023 Impact Factor: 8.176 ISSN: 2582-3930

DUAL ACCESS CONTROL FOR CLOUD BASED DATA STORAGE AND SHARING

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ABSTRACT

Due to its effective and affordable administration, cloud-based data storage has recently attracted growing interest from academia and business. As services are delivered via an open network, it is critical for service providers to adopt secure data storage and sharing mechanisms to protect user privacy and the confidentiality of data. The most popular technique for preventing the compromise of sensitive data is encryption. The practical necessity for data management, however, cannot be adequately addressed by just encrypting data. Moreover, a strong access control over download requests should be taken into account to prevent Economic Denial of Sustainability attacks from being conducted to prevent users from using the service. Each of the two dual access control systems is intended for a different planned context.We create a technique for controlling download requests without sacrificing security or effectiveness. There is also a presentation of the systems' experimental and security analyses.

Keywords: Cloud-based data sharing, Access Control, Cloud Storage Service, Attribute Based Encryption.

Introduction:

The Cloud-based storage has received a lot of attention in recent years, and businesses now choose to outsource their data to remote clouds in order to avoid having to upgrade their local data management infrastructure and/or equipment.

We suggest a brand-new system called dual access control to address the two issues outlined above. Attribute-based encryption (ABE), which permits the secrecy of outsourced data as well as finegrained control over the outsourced data, is one of the potential contenders for securing data in cloud-based storage services. In specifically, Ciphertext-Policy ABE (CP-ABE) offers a reliable method of data encryption that enables the specification of access policies, which specify the rights of possible data receivers, over encrypted data. Please take note that in this research, we examine the usage of CP-ABE in our method. Nevertheless, using the CP-ABE approach alone is insufficient to create a sophisticated system that ensures the control of both data access and download requests.

Objective:

The primary goal of this project is to offer uploaded data. Data owners alone will be in charge of dual access control; no outside parties are involved. They will obtain the data that was uploaded to the cloud at the request of data users with the assistance of data owners. The cloud service encrypts the data and distributes the key to the data consumers.

Scope of the Project:

The project's primary objective is to provide a privacy-enabled and secure cloud project that will be used by AMAZON WEB SERVICES (AWS). Services include preventing Denial of Sustainability assaults and providing privacy, encryption, and encryption.

1. Key management and encryption
2. Portability and interoperability
3. Management of Identity, Entitlement, and Access
4. The architectural framework for cloud computing.
5. Security as a service

Existing System:

The current method compromises security and privacy by utilizing standard servers to store and share data. There is a danger that our data will be stolen. This is the primary flaw in the current method, thus to get around it, we may use the suggested solution.

Drawbacks :

- It makes extensive use of arithmetic.
- Reduced security.
- Analysis of the saved document is challenging.
- The length of time it takes to search through the database of saved documents is linear.

Literature Review:

For flexible data exchange, attribute-based encryption and searchable encryption are combined.

Safe cloud storage is regarded as one of the most critical problems that both enterprises and end users must address before transferring their sensitive data to the cloud. Recently, we've seen several intriguing techniques based on either the promising notion of Symmetric Searchable Encryption (SSE) or the well-studied topic of Attribute-Based Encryption (ABE). In the first scenario, researchers are attempting to build protocols that would safeguard users' data from both internal and external threats while ignoring the issue of user revocation. In the second scenario, however, current alternatives handle the issue of revocation.

The overall efficiency of these systems is jeopardized, however, because the suggested protocols are purely based on ABE schemes, and the quantity of the created ciphertexts and the time required to decrypt rises in direct proportion to the complexity of the access formula. In this research, we present a protocol that combines SSE and ABE while using the fundamental benefits of each approach. The proposed protocol allows users to search directly over encrypted data using an SSE method, while the matching symmetric key required for decryption is safeguarded using a Ciphertext-Policy Attribute-Based Encryption scheme. and searchable encryption to allow for more flexible data exchange.

Problem Statement:

As the key management server only contains the document metadata in encrypted format and the application server will have encrypted documents, a cloud administrator won't be able to decrypt any documents. The papers will remain secure as a consequence. For dual access control, we proposed an identity key verification technique.
The goal of this project is to provide a Secured and Privacy-Enabled The privacy, encryption, and decryption services provided by cloud projects prevent Deny of Sustainability assaults.

Proposed System:

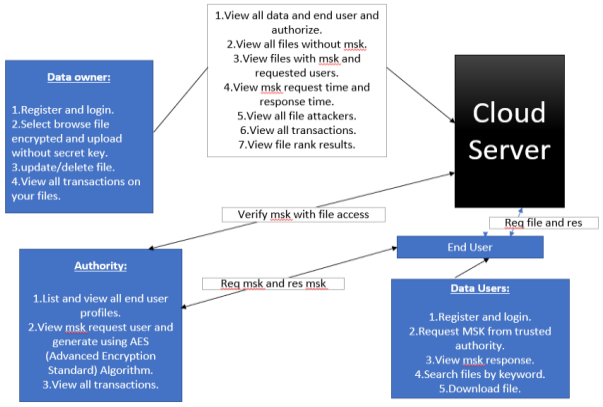
In the proposed system, we suggest a novel method in the proposed system called dual access control. One of the potential options for securing data in cloud-based storage services is attribute-based encryption, which allows for both fine-grained management and the secrecy of outsourced data.

Process:

STEP-1: Install the necessary applications
STEP-2: Defining the links to the databases.
STEP-3: Establish all of the database tables needed for this project.
STEP-4: Redesign the HTML and CSS pages.
STEP-5: Construct the project using the modules.
STEP-6: Launch the Python program (app.py), copy the link, paste it in any browser, and then proceed as directed.

Architecture:

Our dual access control system topologies for cloud data sharing are displayed. The systems specifically include the following entities.



• Initializing system parameters and data user registration are the responsibility of the authority. Also, the initial suggested construction deals with the cloud call request.

• Data owner wants to outsource his data to the cloud and currently retains the data. Particularly, data owners only like to disclose their data with those who meet specific requirements (e.g., professors or associate professors). After their data has been transferred to the cloud, they will be offline.

• A user of data wishes to download and decode encrypted data that has been shared in the cloud. The encrypted file may be downloaded by those with permission, who can then decode it to view the plaintext.

• Both data owners and consumers may save their data easily in the cloud. In particular, it manages the download requests made by data users and maintains the data users' outsourced data.

• The cloud's call request is handled by Enclave.

Module Description:

1. Data Owner :
Register:
Data owner can Register and login with valid credentials
Upload File:
Data provider can upload the file.
View File:
Data Owner can view uploaded file once means whether the file is correctly uploaded or not.

2. Data User :
Register:
Data user can do registration with his details.
Login:
The user needs to register and the data stored in MySQL database.
Search a File:
Data user can search a file based on the keyword ,if file is available then user can view file and send request to cloud to download the file.
Get Key & Download
Once User Request can accept get the key to cloud provider user can download the file.

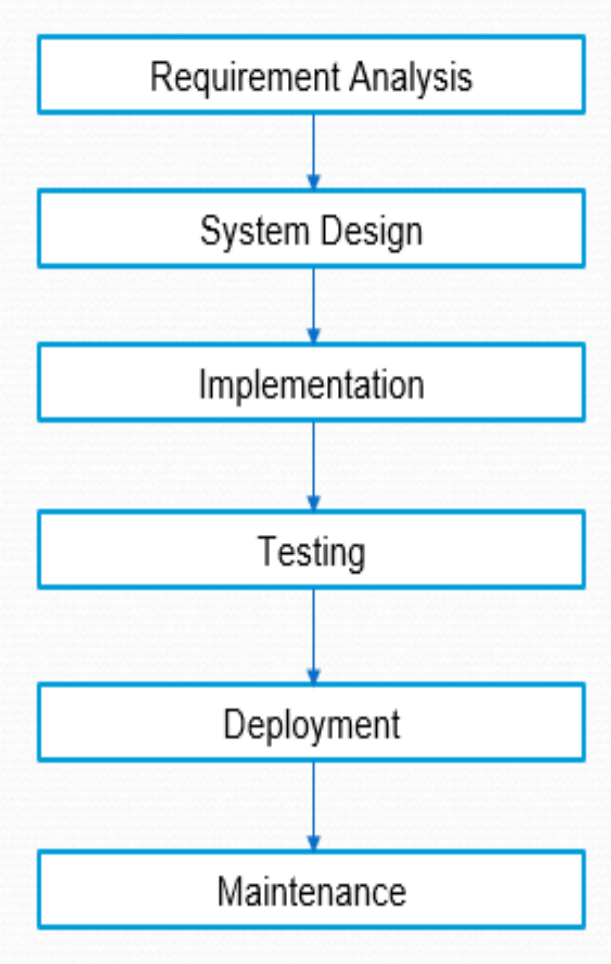
3.Cloud Provider:
Login
Cloud provider can login with his/her credentials.
View Files:
Cloud can view all uploaded files.
View Users:
Cloud can view all the users details to give permission for login the website.
View Data Providers:
Cloud can view all the data providers details to give permission for login the website.
Send Key request to Authority:
Cloud gets a key from authority and send to the authority.

4. Authority:
Login:
Authority login and view users and give authorization to users.
Generate key to users:
Authority generate key to users.

Methodology:

- Collecting and analysis of needs – at this stage, all potential system requirements are gathered and recorded in a requirement specification document.
- System Design – In this step, the required specifications from the previous phase are examined, and the system design is created. In addition to describing the overall system architecture, this system design aids in identifying the hardware and system requirements.
- Implementation: Using feedback from the system design, the system is initially created as a series of compact programmes known as units. These units are then merged in the next step. Unit testing is the process of developing and evaluating each unit for functionality.
- Integration and Testing – Following the testing of each unit created during the implementation phase, the entire system is integrated. The entire system is tested for errors and failures after integration.
- System deployment – After functional and non-functional testing, the product is either provided to customers or deployed in their environments.
- Maintenance – The client environment occasionally experiences problems. Patches are published to address certain problems. Moreover, various improved versions of the

product have been launched. To bring about these changes in the surroundings of the consumer, maintenance is performed.



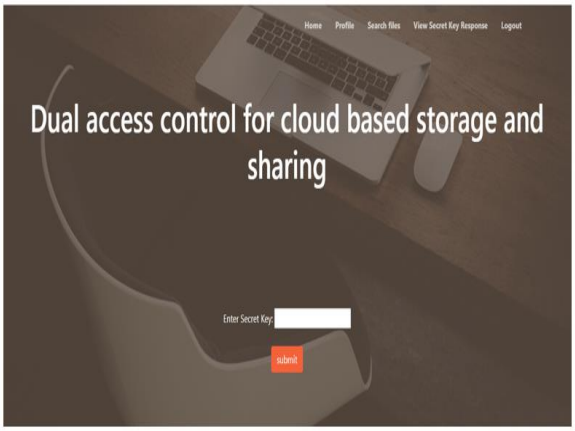
Implementation :

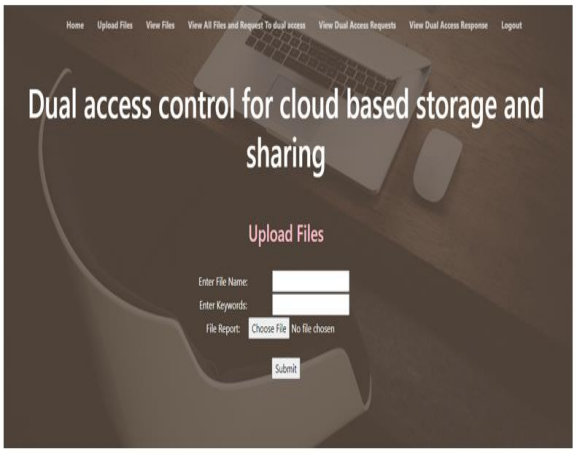
This explains how the system functions. When we have loaded all the libraries, the data owners will upload and store the data to the cloud. Afterwards, people who require the data will submit requests to the data owners. The data owners will then see the request.

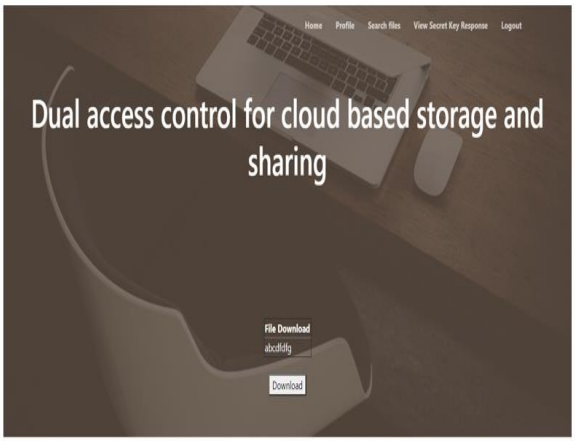
Requirement specifications:

- Operating System : Windows 7/8/9
- IDE : Pycharm
- Server side scripts : HTML, CSS, JS
- Libraries Used : Numpy, IO, OS, sklearn, Flask
- Technology : Python

Result :







Conclusion:

We showed two dual access control systems and addressed an intriguing and pervasive issue with cloud-based data sharing. DDoS/EDoS assaults cannot be used against the suggested systems. We claim that different CP-ABE constructions can "transplant" the method utilised to accomplish the feature of control on download request. The proposed solutions don't incur a large computational or communication overhead, according to the findings of our experiments (compared to its underlying CP-ABE building block).

We take use of the fact that the secret information entered into the enclave cannot be recovered in our improved system. The memory access patterns or other relevant side-channel assaults, however, suggest that the enclave may leak part of its secrets to a malevolent host. Hence, the transparent enclave execution paradigm is shown in. An intriguing challenge is creating a dual access control scheme for cloud data sharing from a transparent enclave. We'll take into account the relevant problem-solving approach in our next work.

Future Scope:

The Future scope of this project is to increase the security and get the data easily by email authentication.

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