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## Email Security

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**Abstract:** *A crucial network application is the email client. It is significant when it is used by the business, health, and educational groups to communicate vital information like business data, patient medical records, and so on. Data and messages can be easily transmitted between senders and receivers across internal networks or the Internet, enabling messages to be received, forwarded, saved, and broadcast to recipients. Due to its numerous features, email has become a popular choice for official communications in many companies. Electronic mail is accessible through a wide range of suitable software clients, as well as through a web browser, and is also widely used for personal usage. For the information security research community, email security becomes a critical concern. to increase the security of email.*

**Keywords:** *Image security, Mail Security*

### 1. INTRODUCTION

Email security becomes a crucial issue for the research community in the field of information security. to strengthen email security. According to the most recent security requirements of the existing upgrades, a number of solutions and standards have been developed to maintain the trustworthiness and vitality of data interchange via e-mail. In this study, some email security methods will be suggested. We introduce each one and assess it in terms of security. various approaches and methods employed to address and improve the security of email systems There are numerous methods. Email security refers to safeguarding confidential information in email correspondence as well as account security from theft, loss, or compromise. employing misleading communications to persuade recipients to give sensitive information, download attachments, or click on links that lead to malware installation on the victim's device In an enterprise network, email is a common way for malware, spam, and phishing attempts to proliferate and compromise sensitive company data. Attackers who want



to take control of both personal and commercial email accounts frequently enter through email, so businesses should take a number of steps to strengthen email security. Security For Emails Is Important Malware can be spread through email communications and is highly harmful. via hyperlinks pointing to malicious websites or in attachments disguised to look like legitimate documents Employees frequently get phishing emails that contain malware.

## **2. LITERATURE REVIEW:**

### **2.1 Security point of view:**

The algorithm of encoding approach was utilised in the ref[10] research to secure the image documents. However, even if it had actually worked, from a security perspective, this encryption scheme would have been exceedingly unreliable for two reasons. First off, there isn't a hidden key. As a result, it is an encoding system rather than a genuine encryption one.

### **2.2 Block-Based Algorithm**

The following are some of the techniques that are used: Large images cannot use the blowfish algorithm since it performs best for the lowest image block size. Higher correlation and lower entropy were the outcomes. They then suggested a new algorithm.

### **2.3 Steganography:**

The practise of concealing sensitive information within a carrier, such as an audio, video, or image file. Since the secret information was encoded in an image file that was sent to the recipient instead of the secret information itself, this technology allowed for invisible communication. Information is being protected by the cipher text by being converted into an unintelligible form.

### **2.4 Particle swarm optimization (PSO):**

They talked about using Particle Swarm Optimization (PSO) to tamper-proof and authenticate images. for reasons including durability, security, and accurate localisation of tampering The issues are addressed by this plan. PSO was used to extract the features in the domain of the Daubechies4 wavelet transform in order to produce the picture hash.

### **2.5 Virtual Private Network (VPN):**

Additional data protection is offered in various application sectors, such as finance, banking, and reservation systems, by the use of virtual private network (VPN), data encryption, and data embedding techniques. In order to overcome this deficiency, the picture archiving and communications system (PACS), an integrated management system for preserving and transmitting medical image data, was created.

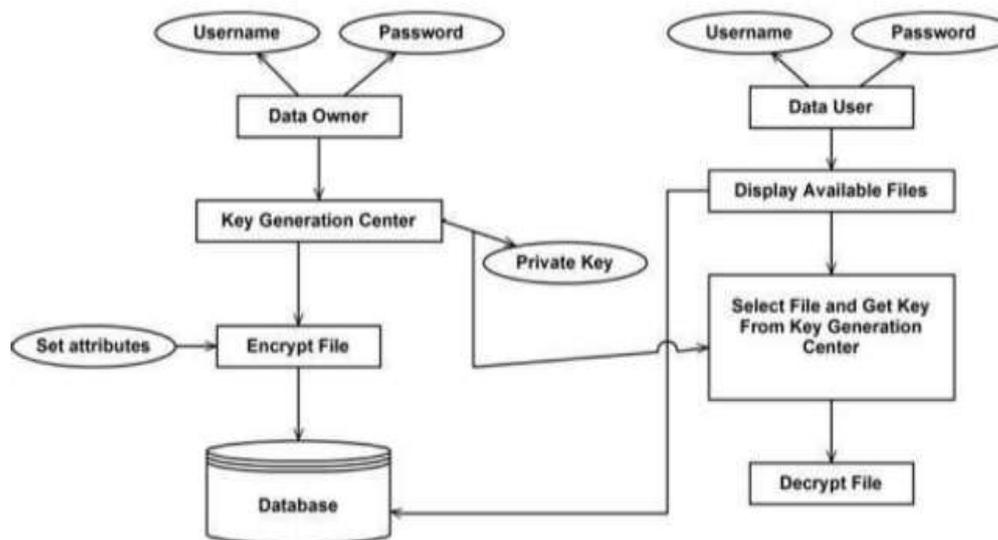
### **2.6 Summery:**

The privacy of cloud-based data is attained through the use of encryption methods. To accomplish data cryptographic security, a variety of strategies and methods are used in network security. The most popular technique today is attribute-based encryption (ABE). If a user submits an access request to the cloud, the cloud will provide cypher text data to that user, who must use your private key to decrypt the data.

### 3. METHODOLOGY

The block diagram functions as follows.

1. Data owner chooses which photographs to upload after entering their username and password.
2. A special key will be generated at the key generation centre to encrypt this image.
3. The photos will be keyed into a database for storage. User will select image and request for the key to owner. After that user will enter the key and the image will get decrypt to the original form.



**A. Registration Phase:** Initially, the user enters their username, password, and mobile number. They are then given the option to select the photo matrix after selecting the security level. The amount of messages relies on that number when the security level is set to  $2n$ . After entering their communications in the message box, the user must choose how they should be converted before having the converted communications shown as QR pictures in the registration part below.

**B. Login Phase:** Depending on the security level matrix of the presented QR pictures, the user enters their user ID and password during the login phase. The user registers the appropriate encoded image during the registration process.

**C. Confirmation Phase:** The system examines the level-by-level selection of the image, or compares the data entered with the data entered at registration time; if any level is unsuccessful, the system may immediately and without warning terminate the user's

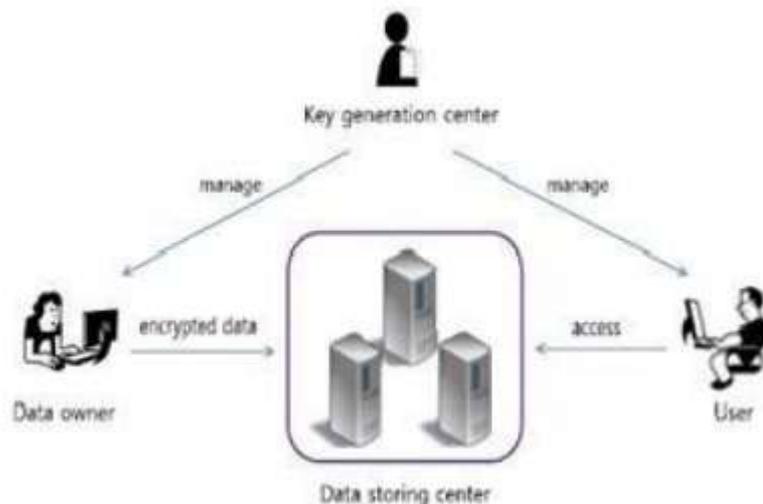
session. The user will receive the OTP on their registered mobile device if everything is correct.

**D. Key generation centre:** the principal organisation in charge of creating private and public CP-ABEs. For users, it has the power to give, cancel, and alter attribute keys. On the basis of each user's unique characteristics, it provides them various access permissions. It is thought to be serious but intriguing.

**E. Data-storing centre:** It is a business that provides a service for data exchange. Its duties include providing pertinent content offerings and controlling access to the data storage for outside users.

**F. Data owner:** It is a client who want to upload data onto the external data centre in order to facilitate cost savings or simpler sharing. A data owner is in charge of creating a (attribute-based) access policy and enforcing it on its own data by encrypting the data covered by the policy before distributing it.

**G. User:** The organisation that needs access to the data is that organisation. A user will be able to decrypt the cypher text and acquire the data if they have a set of characteristics that satisfy the access policy for the encrypted data and are not revoked in any of the valid attribute groups.



#### 4. RESULT



Fig1. Auto Generated unique QR code as password  
The system generates a unique QR code using the QR Encryption technique that is used to register users.

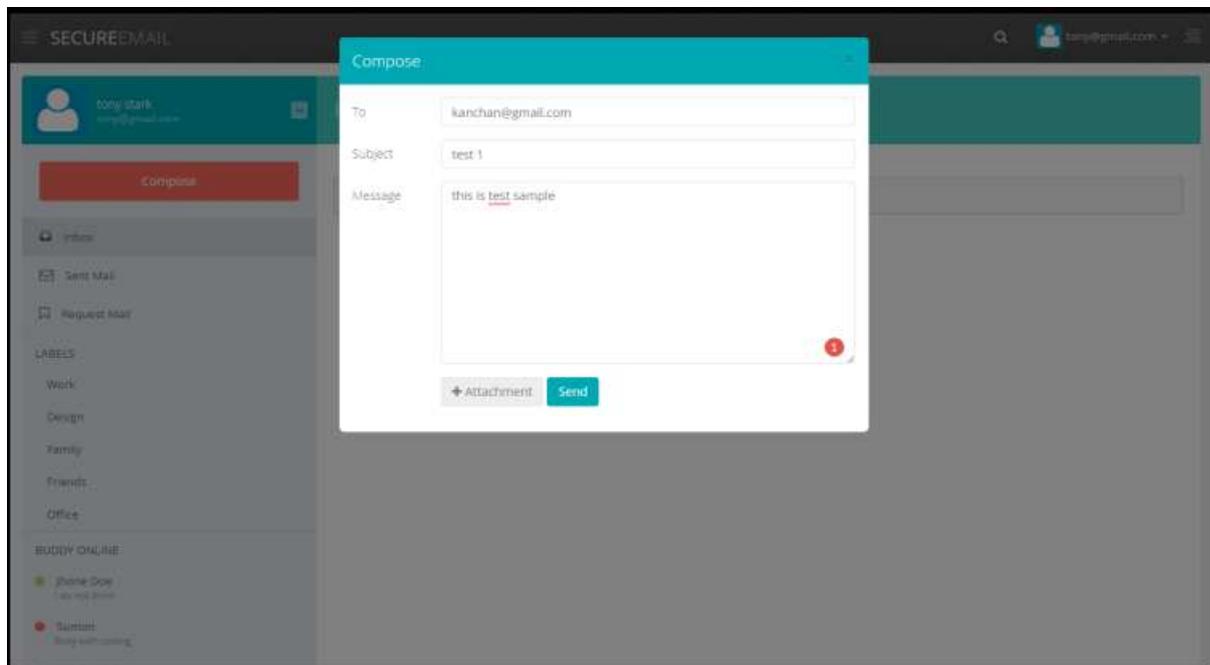


Fig2. User Mail Compose Form  
The data owner (first user) can compose his mail for the receiver (second user ) with image file as a attachment

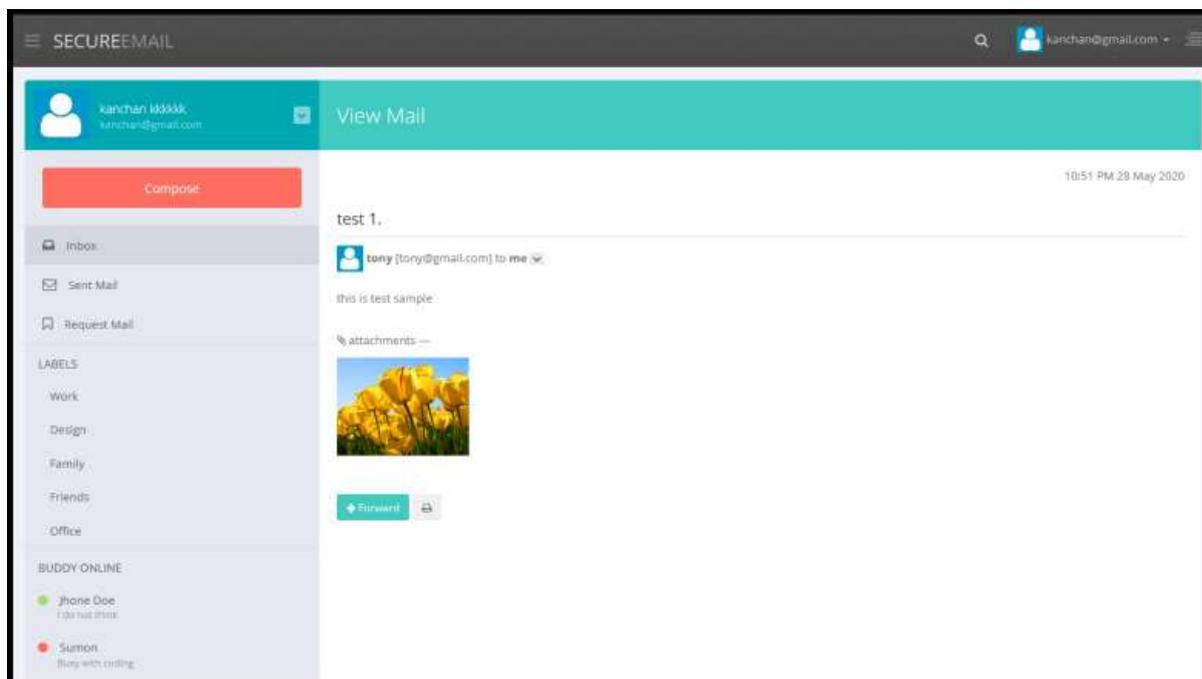


Fig. The receiver (Second user) receives Mail to his inbox

The receiver (second user) receives his mail sent by the data owner (first user ) with image file as a attachment.

## 5. CONCLUSION

The proposed system overcomes the drawbacks found in the present existing mail servers regarding security by providing better security for the mails especially containing critical information. Hacking has become one of the greatest threats faced in today's mailing systems due to the usage of only one level of security, i.e., a login-password system. The developed application with 3 layer authentication provides enhanced security for the critical mails shared via Internet and ensures that the users don't have to worry about the message being hacked. It builds a secure system that will ensure that the critical information is not leaked or misused thus making it an ideal mailing system. It adds privacy, authentication, message integrity, and nonrepudiation to plaintext email.

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