

## SECURE CLOUD COMPUTING ENVIRONMENT: A SURVEY

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**ABSTRACT:** Cloud computing may be a technology helps to share resource, services and platform with another user. This is often the technology wont to organized great amount of knowledge and multiple services for establishing convenient manner of communication and execution. In easy words, cloud computing technology facilitate to access services and resource while not putting in or configuring into native system. So as to beat these challenges, numerous algorithms are developed and enforced with cloud computing applications to induce best manner for implementation. Today, security becomes indispensable concern and needed separate attention for cloud computing surroundings. This analysis works think about this issue on primary mode and take a look at exploring algorithms and their limitations to look at and analyze security solutions and vulnerabilities for scope of improvement. Here, work concludes with the comparative study of various existing resolution and address the common issues and excuses.

**Keywords:** Cryptography, SaaS Model, Integrity

### I. INTRODUCTION

Cloud computing technology is seen because the assortment of net based mostly services for higher utilizing the resources and services. It's the new utility that provides virtualization, parallel and distributed computing into single unit. It implies the sharing of resources to handle applications with reduces capital and low maintenance value. It provides multiplied quantifiable and easy access feature with low completeness. Cloud computing is a model for sanctionative omnipresent, convenient, on demand network access to a shared pool of resources (e.g., networks, storage, applications and services) that may be speedily provisioned and discharged with borderline management effort or service supplier interaction. The cloud model consists of 5 essential characteristics and 3 service model. Cloud computing is technology that isn't product however quite service provision. It's the mixture of computing and services. It believes in something –anywhere idea and provides services through net at single browser. It provides and platform to access numerous computer code and computation surroundings at single purpose and straightforward knowledge handling.

### II. CLOUD COMPUTING OVERVIEW

Internet is that the key bone for Cloud computing surroundings and applications area unit deployed through public networks. With cloud applications, organizations will use services and knowledge from any physical location. Outside access is also insecure and lifts questions about privacy, confidentiality, integrity etc and demanded trustworthy computing surroundings whereby knowledge confidentiality, authentication with access management is

maintained. Five essential elements of cloud surroundings are listed below;

#### 1. Data:

It the gathering of material which can be helpful might not.

#### 2. Storage:

This is often the organized set of knowledge for straightforward access, update and management purpose. It considers datacenters, disk, and faucets for storage purpose and info servers for organization of knowledge.

#### 3. Consumer Networks:

It includes numerous devices like organizer, sensible Phone, I-Phone, Computers, laptops etc. it should classified as mobile consumer, assume and thick consumer.

#### 4. Applications & Computing:

Applications area unit the human or machine developed computing program helps to satisfy the necessity and execution of task. Further, it needs Computing, that is that the goal of headed activity making sequence of steps mistreatment algorithms.

#### 5. Virtualization:

It is the creation of virtual version instead of actual. It helps to access resources and services

A block illustration of element design of cloud computing is shown in figure one.

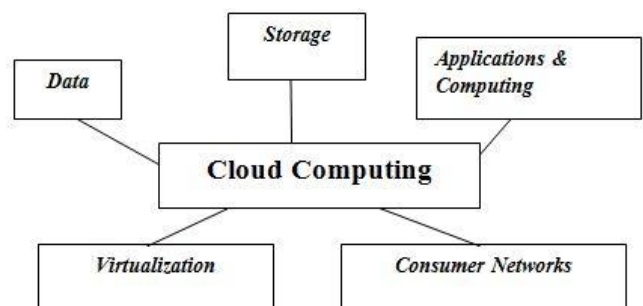


Figure 1: Elements of Cloud Computing

The cloud computing surroundings perpetually enforced with the assistance of cloud services. It is delineate as follows.

#### 1. Computer code as a Service [Saas]:

This service configures access of computer code and application our networks. It is accessed through browser of mentioned as computer code on demand facility.

#### 2. Platform as a Service [Paas]:

A collection of libraries, runtime surroundings, development languages, and system computer code could apprehend because the platform. This service helps to access platforms and execution surroundings mistreatment net services.

#### 3. Infrastructure as a Service:

Infrastructure could think about because the storage or process capability of the node. IaaS provides facility to share resources and deployed application as utility computing.

Cloud computing readying models: cloud services area unit generally created out there to its client via sorts of cloud. A short review of sorts of cloud is cited below. Private Cloud: It delimits the services readying and access up-to restricted network area unit. It in hand maintained and accessed by single organization and deployed among computer network. Users among the organization will use the information, out there services and different application. Public Cloud: this sort of cloud needed implementation of cloud services mistreatment net facility. It should own by single user however provides facility for general public conjointly. During this all services area unit out there and any user will get those services by paying acceptable quantity. Community Cloud: it's in hand and maintained by a company for a selected community. This cloud may well be shared by several organizations for any explicit reason, probably it managed by internally or outwardly, in terms of value it's cheaper than personal however costlier than public. Hybrid Cloud - this sort of cloud may be a combination of 2 or additional clouds (for example combining public and community clouds).

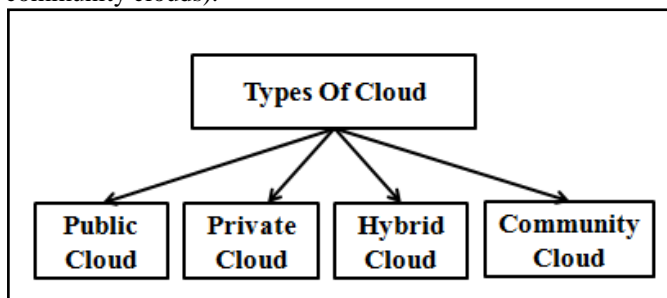


Figure 2: Cloud Computing Service model.

### III. RELATED WORKS

K. Nasin, et. al. [1] explores that cloud frameworks is one among the most important utility phenomena for today's development. Here, they explores the recent problems and address security because the one among the most important concern for cloud computing. Assurance regarding security services not solely helps to keep up privacy and originality of knowledge however maintains user trust on service suppliers. To implement the protection mechanism with cloud surroundings they uses AES and RSA algorithmic rule with key sharing mechanism. AES may be a bilaterally symmetric key algorithms wont to generate personal key for RSA algorithms. Moreover, RSA supports variable key length with sturdy science algorithmic rule. Finally, they solely specialize in secure file communication and succeed to attain confidentiality with cloud applications. Chen, D. [2] ET. Al. address that info security have an effect on the performance of cloud applications and should degrade the standard of service execution. Opponent could explore the vulnerabilities and deploy security threats or sniffing activity to compromise the privacy of the communication. So, to keep up the user trust and reliableness on services similarly improvement into quality of services execution, an implementation of security model is necessary. Finally, they compare their resolution with airawet framework and take a look at to cut back info

run issue. Jayant, D. [3] projected an access management resolution mistreatment RBAC theme through AES and RSA algorithmic rule. Here, they uses RSA and AES model for secret writing and decoding purpose wherever RBAC is employed for access management purpose. It provides the uploading rights and totally different rights to different user as per RBAC model. Cindhamani.J et. al. [4] address that there's sturdy got to revised the information security style and add security because the integrated element of cloud surroundings. They use a 128-bit key for RSA algorithmic rule and third party auditor to stay safe eye of authentication and verification method. Here, deployed resolution improves the protection feature into 2 ways in which one is storage finish and another is access of knowledge. Shilpi Singh et al [5] projected security through elliptic curve science algorithmic rule. User initial logins into the server and certify himself. Afterwards, 2 exchanges happened with ECDH key exchange and bilaterally symmetric key algorithmic rule to write in code and rewrite the information. A 1 Time parole technique is additionally used for sturdy authentication purpose. Kawser Wazed Nafi et al[6] conjointly projected a security framework similar with higher than researchers. They need conjointly projected OTP mechanism and security services for secure communication.

### IV. SECURE CLOUD ENVIRONMENT

Any organization or PC node that method information through public network is subject for security breach and should be target for varied security threats and attackers. It creates perplexity in user's mind regarding the trust and privacy of knowledge. Any user who access or store their guidance exploitation cloud applications perpetually needed assurance regarding safety and security of content.

The study of complete existing system explore that, existing solutions provides security however either one or 2 level. They are doing not offers complete security model or framework to integrate security with cloud applications. They address an awfully robust want of security model that ought to give security not because the demand however as essential element of application. Following major issues has been discovered throughout the study.

Following major problems has been observed in cloud environment.

- Lack of security provision during communication.
- Privacy is major requirement and concern for user.
- An efficient storage technique and better integrity verification is required in new solution.

### V. CLOUD COMUTING SECURITY: ISSUES & CHALLENGES

Cloud computing surroundings have wide application space and should deploy with varied purpose. Although, security was primary concern since origin of web because of its public affiliation, it becomes terribly essential because of involvement of web with cloud computing. Cloud computing offers wide computing nature surroundings with distributed storage with parallel execution facility. It needs web to boost its scope from computer network to worldwide and uses web

services to access cloud application from outside the network.

The study of complete cloud surroundings raises sure problems which can be listed below;

- Data security
- Identity and access management
- Key management
- Virtual machine security

Among these main security problems within the cloud, knowledge security and integrity is believed to be the foremost tough drawback that may limit the employment of cloud computing. In fact, access management and key management area unit all problems concerned in knowledge security.

Understanding of security threats in cloud computing surroundings for analyzing the necessity of security, sure security threats area unit determined those area unit delineate into Table1.

Table 1: Security Threats in Cloud Environment

Attack	Description
Tampering or Modification	Attacker may alter or fabricate information during communication
Eavesdropping Information Disclosure	Attacker may listen or read the information
Repudiation	Attacker may Refuse the validity or claim of information or service
Man-in-the-Middle Attack	Attacker may intercept the communication and deploy third party involvement
Replay Attack	Attacker may hold and resend the packet information after a time delay.
Identity Spoofing	Attacker may kill or misuse the identity of node, server or client.
Viruses and Worms	Attacker may use certain bad source code to compromise

## VI. CONCLUSION & FUTURE SCOPE

As on currently cloud is ever-changing the method a user works over the network. It incessantly reduces the load on users in terms of price and quality. It conjointly lets the organization feel safe regarding their information against security breaches and fault interruptions. It provides a strong method of serving user through a service based mostly model. In very thanks to come through its goal, the modified computing conjointly demands a number of changed operations of security management for additional protection. During this paper a study of cloud security surroundings and demand of cloud security has been explored and address with drawback observations.

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