ISSN(Online): 2319-8753
ISSN (Print): 2347-6710

International Journal of Innovative Research in Science, Engineering and Technology

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

Visit: www.ijirset.com

Vol. 9, Issue 3, March 2020

Dynamic and Robust Access Control from Multiple Authorities in cloud Public Cloud : An overview

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ABSTRACT: Multi-cloud storage Provides a solution to the risks and challenges of cloud computing by storing data via various cloud service providers (CSPs), including vendor lock-in, and data privacy. CSB is a Software-as - a-Service (SaaS) third-party cloud storage service provider that manages the relationship between one or more CSPs and cloud clients. Cloud is an emerging technology and cloud-based storage is a new concept that allows users not only to upload data to the internet, but also to easily access available resources and share data with anyone at any time. But cloud is a technique that generates a restore feature that enables clients to go back to a previous one attack state or Computer catastrophe provides an easy way to remove malware and computer security. The attackers have short-term windows where they should be trained and targeted for remote start-up and stoppage of VM. This is an extremely effective tool for defense. Because the hypervisor operates from Virtual Machine it is possible to control malware. VM Infrastructure will secure itself as a physical server infrastructure for such purposes. In this paper we describe literature study of user activity base cloud attack detection and prevention techniques using machine learning techniques. We also proposed an approach to forensic investigation, using Log Information and VM logs of the malicious activities in the cloud environment. To ensure the security of Log files we aim to apply Encryption algorithms to Log information, which will be helpful for further investigation.

KEYWORDS: Access control, Attributes-Based Encryption, data storage, Multi-Authority

I. INTRODUCTION

Cloud storage is ansignificant amenity of cloud computing, which delivers services for data owners to subcontract data to collection in cloud via Internet. As cloud storage abstainsseveralbenefits, there is quietremaindersnumerous challenges amongst which,privacy as well as security of users' data need major issues in public cloud storage. Usually, a data owner stores his/her data in trusted servers, organized by a totally trustworthyadministrator[3]. Attribute-based Encryption (ABE) is observed as one of the utmostappropriatearrangements to bearing data access control in public clouds aimed at it can promise data owners direct control over their data and provide a fine-grained access control service. In furthermostpresent CP-ABE[1], [2] arrangements there is only one expert witnessaccountable for attribute management as well as key distribution. This only-one-authority consequence can carry a single-point bottleneck on both security and performance. Currently we use threshold multi-authority CP-ABE access control system, named RAAC, to treaty with the single-point bottleneck on together security as well as performance in greatestpresent schemes. RAAC is Threshold Multi-Authority Access Control System. In RAAC, multiple authorities togetheraccomplish the entire attribute set but no one devises full control of any precise attribute.

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II. LITERATURE SURVEY

Wei Li, et al. [1] in TMACS: A Robust and Verifiable Threshold Multi-Authority Access Control System in Public Cloud Storage", access control systems for public cloud storage, brings a single-point bottleneck on both security and execution against the single authority for a particular property.Firstdesignmulti-authority get to control design to manage the problem. By presenting the consolidating of (t, n) edge mystery sharing and multi-authority CP-ABE plot, at that point proposes and understands a powerful and unquestionable multi-authority get to control framework in public cloud storage, in which multiple specialists together deal with a uniform trait set. Further by effectively joining the traditional multi-authority plot with this plan, construct a crossover one, which can fulfill the situation of traits originating from various specialists and in addition accomplishing security and framework level vigor. Cloud storage is an essential administration of cloud registering [1]. It enables information proprietors to have their information in the cloud and rely on cloud servers to provide information access to the clients (information consumers). Information get to control is a compelling method to guarantee the information security in the cloud. In any case, cloud storage benefit isolates the parts of the information proprietor from the information specialist organization, and the information proprietor does not collaborate with the client specifically to provide information get to benefit, which influences the information to get to control a testing issue in cloud storage frameworks. Because the cloud server can't be completely trusted by information proprietors, existing server-based access control techniques are not any more appropriate to cloud stockpiling frameworks. To keep the un-trusted servers from getting to touchy information, conventional strategies typically scramble the information and just clients holding substantial keys can get to the information. These techniques require confounded key administration plans and the information proprietors need to remain online all an opportunity to convey keys to new clients in the framework. Moreover, these techniques cause high stockpiling overhead on the server, on the grounds that the server should store various encrypted duplicates of similar information for clients with various keys.

Advantages
1: Provide security of Access Policy
2: Security alongside collision as well as injection attack
3: Data confidentiality guarantee
4: Soundness and completeness
5: Security against Compromising

Disadvantages
1: Bottleneck issue generate when user request’s very high.
2: multiple resources required for all authorities.

Hong, et al.[2] shown that, with the segment CUK a renounced client can change the recently encrypted ciphertext to a past version, which can be additionally decrypted with his/her repudiated old-version secret keys. Creator additionally proposed a multi-authority ciphertext-strategy characteristic based encryption-based information get to control for distributed storage, in which the creators asserted that the instrument in managing quality repudiation could accomplish both forward security and in reverse security. Shockingly, our further examination and examination demonstrate that their work embraces a bidirectional re-encryption technique in ciphertext refreshing, so a security helplessness shows up. Our proposed assault technique shows that a renounced client can at present decrypt new ciphertexts that are guaranteed to require the new-version secret keys to decrypt.

Advantages
1: Advantage: 1. in dealing with attribute revocation, main construction proved it secure.
Disadvantage: 1. cannot compromise all authority at a same time. 2. Security vulnerability.

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Vol. 9, Issue 3, March 2020

L. Zhou, V. Varadharajan, and M. Hitchens [2], "Achieving secure role-based access control on scrambled information in distributed storage" proposed role-based encryption (RBE) plot that incorporates the cryptographic methods with RBAC. The RBE plot enables RBAC strategies to be implemented for the encoded information put away in public clouds. Based on the proposed conspire, framework additionally exhibit a secure RBE-based crossover distributed storage design that enables an association to store information securely in a public cloud, while keeping up the delicate data identified with the association's structure in a private cloud. Framework portray a handy execution of the proposed RBE-based design and examine the execution comes about. They additionally exhibit that clients just need to keep a solitary key for decryption, and framework tasks are effective paying little mind to the multifaceted nature of the role pecking order and client participation in the framework.

Advantages
1: System architecture provide public as well private cloud which can provide resources on ad hoc basis.
2: administrator first define the policy for authenticate users, and he can change also that will provide more flexibility for system

Disadvantages
1: No provide for key management server or not allocate any resource for key server.
2: Very expensive for private cloud resources.

Jung, et al. [3]proposed a semi-anonymous attribute-based benefit control plot AnonyControl and a fully-anonymous attribute-based benefit control conspire AnonyControl-F to address the client protection issue in a cloud storage server. The proposed plot could ensure client's security against each single expert. Incomplete data is unveiled in AnonyControl and no data is revealed in AnonyControl-F. The plan was tolerant against authority compromise, and compromising of up to (N −2) authorities did not bring the whole system down. Author provides detailed about security and feasibility of the scheme. Likewise actualizes the genuine toolbox of a multi-expert based encryption plot AnonyControl and AnonyControl. It extraordinarily draws in consideration and enthusiasm from both scholarly world and industry because of the productivity, yet it additionally has no less than three difficulties that must be dealt with before going to our genuine to the best of our insight. Above all else, information classification ought to be ensured. The information security isn't just about the information substance. Since the most alluring piece of the cloud computing is the calculation outsourcing, it is a long ways sufficiently past to simply lead an entrance control. More probable, clients need to control the benefits of information control over different clients or cloud servers. This is on account of when delicate data or calculation is outsourced to the cloud servers or another client, which is out of users‟ control as a rule, protection dangers would rise drastically in light of the fact that the servers may illicitly investigate users‟ information and access touchy data, or different clients may have the capacity to derive delicate data from the outsourced computation.

Advantages
1: System generates a key from multiple authorities base on different attributes it will provide highest security to encrypted data.
2: Authorities (t,n) any T authority from n provide a keys to end user once request has generated

Disadvantages
1: Multiple resources required.
2: Sometime increase time complexity to checking keys from all authorities when specific authority is busy.
E. Goh, H. Shacham, N. Modadugu, and D. Boneh [4], proposed Sirius: Securing remote untrusted stockpiling. This paper presents SiRiUS, a safe document framework intended to be layered over shaky system and P2P record frameworks, for example, NFS, CIFS, OceanStore, and Yahoo! Portfolio. SiRiUSexpect the system stockpiling is untrusted and gives its own read-write cryptographic access control for record level sharing. Key administration and denial is straightforward with negligible out-of-band correspondence. Document framework freshness ensures are

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Vol. 9, Issue 3, March 2020

upheld by SiRiUS utilizing hash tree developments. SiRiUS contains a novel technique for performing document irregular access in a cryptographic record framework without the utilization of a piece server. Augmentations to SiRiUS incorporate substantial scale amass sharing utilizing the NNL key renouncement development. Our execution of SiRiUS performs well with respect to the basic document framework in spite of utilizing cryptographic tasks.

Advantages
1: Minimal Client Software. A SiRiUS client should need to run just a client level daemon. Clients ought not be required to overhaul or fix the customer OS kernel.
2: Performance. SiRiUS ought not perform preposterously more regrettable than its basic.

Disadvantages
1: A serious problem with this legacy network file systems is that their access control mechanisms are insecure and easily defeated.
2: File name collusion problem should be occur because of multiple distributed keys.

Kan Yang and XiaohuaJia in [5] work proposes the first key-policy attribute-based encryption (KP-ABE) schemes allowing for non-monotonic access structures (i.e., that may contain discredited attributes) and with consistent figure content size. Towards accomplishing this objective, in this work first demonstrate that a specific class of identity-based broadcast encryption schemes blandly yields monotonic KP-ABE frameworks in the particular set model. At that point depict another proficient identity-based denial instrument that, when joined with a specific instantiation of our general monotonic development, offers ascend to the primary genuinely expressive KP-ABE acknowledgment with consistent size figure writings. The drawback of these new developments is that private keys have quadratic size in the quantity of attributes. Then again, they diminish the quantity of blending assessments to a consistent, which seems, by all accounts, to be a one of a kind component among expressive KP-ABE schemes. Attribute-based encryption comes in two favors. In key-policy ABE schemes (KP-ABE), attribute sets are utilized to comment on figure writings and private keys are related with get to structures that indicate which figure messages the client will be qualified for decrypt.Cipher text-policy ABE (CP-ABE) proceeds in the dual way, by assigning attribute sets to private keys and letting senders specify an access policy that receivers' attribute sets should comply with.

Advantages
1: No middle ware required it will reduce the network load of system.
2: single key algorithm used it will reduce.

Disadvantages
1: Single keys base algorithm used for data encryption, the security can be leak sometime.
2: There can be possible SQL injection base as well collusion base attack due to less security

In [6], the author has introduced Ciphertext approach quality based encryption framework, that proposed CP-ASBE which is a form of CP-ABE, which organizes user attributes into a recursive family of sets and also allows to users to establish dynamic constraints on how attributes may be combined. And also this system shows how CP-ASBE can support compound attributes, and numerical attributes with multiple those value assignments. In their work, design of CP-ASBE system is secure in the standard model but extending for a multi-authority system. It also focus on Attribute-Based Encryption (ABE) is a new paradigm where such policies are specified and cryptographically enforced in the encryption algorithm itself. Ciphertext-Policy ABE (CP-ABE) is a form of ABE where policies are associated with encrypted data and attributes are associated with keys. In this work system focus on improving the flexibility of representing user attributes in keys. Specifically, system propose Ciphertext Policy Attribute Set Based Encryption (CP-ASBE) - a new form of CP-ABE - which, unlike existing CP-ABE schemes that represent user attributes as a monolithic set in keys, organizes user attributes into a recursive set based structure and allows users to impose dynamic constraints on how those attributes may be combined to satisfy a policy.

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The author [7] has presented another kind of Identity Based Encryption (IBE) plan that called Fuzzy Identity Based Encryption. A Fuzzy IBE plan takes into consideration a private key for a character id to unscramble a Ciphertext scrambled with another personality id0 if and just if the personalities id and id0 are near one another as measured by some metric (e.g. Hamming separation). Author also define two constructions of Fuzzy IBE schemes. Our constructions can be viewed as an Identity-Based Encryption of a message under several attributes that compose a (fuzzy) identity. Our IBE schemes are both error-tolerant and secure against collusion attacks. Additionally, our basic construction does not use random oracles. It prove the security of our schemes under the Selective-ID security model.

System [8], author has introduced the full security by achieving the dual system encryption strategy. The main challenge of applying dual system encryption strategy to ABE is the structure of keys and Ciphertext. In IBE or HIBE system, structure of keys and ciphertexts are both associated with the same type of simple object that is identities. In this paper, author presents two completely secure useful encryption plans. Their first result is a completely secure property based encryption (ABE) plan. System is fully secure (attribute-hiding) predicate encryption (PE) scheme for inner-product predicates. As for ABE, previous constructions of such schemes were only proven to be selectively secure. Security is proven under a non-interactive assumption whose size does not depend on the number of queries. The scheme is comparably efficient to existing selectively secure schemes. System also present a fully secure hierarchical PE scheme under the same assumption. The key technique used to obtain these results is an elaborate combination of the dual system encryption methodology (adapted to the structure of inner product PE systems) and a new approach on bilinear pairings using the notion of dual pairing vector spaces (DPVS) proposed by Okamoto and Takashima.

System [9] proposes the principal of key-approach characteristic which is based on encryption (KP-ABE) with consideration of non-monotonic access structures and with regular ciphertext size. System also proposes the first key-policy attribute-based encryption (KPABE) schemes allowing for non-monotonic access structures (i.e., that may contain negated attributes) and with constant ciphertext size. Towards achieving this goal, system first show that a certain class of identity based broadcast encryption schemes generically yields monotonic KPABE systems in the selective set model. System then describe a new efficient identity-based revocation mechanism that, when combined with a particular instantiation of our general monotonic construction, gives rise to the first truly expressive KP-ABE realization with constant-size ciphertexts. The downside of these new constructions is that private keys have quadratic size in the number of attributes. On the other hand, they reduce the number of pairing evaluations to a constant, which appears to be a unique feature among expressive KP-ABE schemes.

The author [10] has described that, system has single authority which can monitor every single attribute of all users is unrealistic. Therefore Multi-authority attribute-based encryption which enables a more realistic classification of attribute-based access control, such that the advantage is that different authorities are responsible for assigning different sets of attributes to users. However, the CA in that construction has the power to decrypt every ciphertext, which seems somehow contradictory to the original goal of distributing control over many potentially untrusted authorities. Moreover, in that construction, the use of a consistent GID allowed the authorities to combine their information to build a full profile with all of a user's attributes, which unnecessarily compromises the privacy of the user. In this paper, system also propose a solution which removes the trusted central authority, and protects the users' privacy by preventing the authorities from pooling their information on particular users, thus making ABE more usable in practice.

Zhongma Zhu and Rui Jiang [11] proposed A Secure Anti-Collusion Data Sharing Scheme for Dynamic Groups in the Cloud in IEEE TRANSACTIONS ON PARALLEL AND DISTRIBUTED SYSTEMS, VOL. 27, NO. 1, JANUARY 2016.
The system proposed a secure way for key distribution without any secure communication channels, and the users can securely obtain their private keys from group manager. Secondly, this scheme can achieve fine grained access control, any user in the group can use the source in the cloud and revoked users cannot access the cloud again after they are

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Visit: www.ijirset.com

Vol. 9, Issue 3, March 2020

revoked. Thirdly, system can protect the scheme from collusion attack, which means that revoked users cannot get the original data file even if they conspire with the untrusted cloud. In this approach, by leveraging polynomial function, system can achieve a secure user revocation scheme, Finally, this scheme can achieve fine efficiency, which means previous users need not to update their private keys for the situation either a new user joins in the group or a user is revoked from the group.

L. Zhou, V. Varadharajan, and M. Hitchens [12], "Achieving secure role-based access control on encrypted data in cloud storage" proposed role-based encryption (RBE) scheme that integrates the cryptographic techniques with RBAC. The RBE scheme allows RBAC policies to be enforced for the encrypted data stored in public clouds. Based on the proposed scheme, system also present a secure RBE-based hybrid cloud storage architecture that allows an organization to store data securely in a public cloud, while maintaining the sensitive information related to the organization's structure in a private cloud. System describe a practical implementation of the proposed RBE-based architecture and discuss the performance results. They also demonstrate that users only need to keep a single key for decryption, and system operations are efficient regardless of the complexity of the role hierarchy and user membership in the system.

III. SYSTEM DESIGN

In this proposed system, we applied a method called TMAC (Threshold Multi Access Cloud Storage.). This method will overcome the disadvantage of single bottle neck problematic. This System consist of Multiple Attribute Authorities (Admin) but they are not inter linked between each other's. So the Unofficial operators cannot be negotiation the Admin for Lawful user's private key. So, the Lawful Users can get the Make available Keys by requesting a few t authorizes. So the Private Key communication is extra protected.

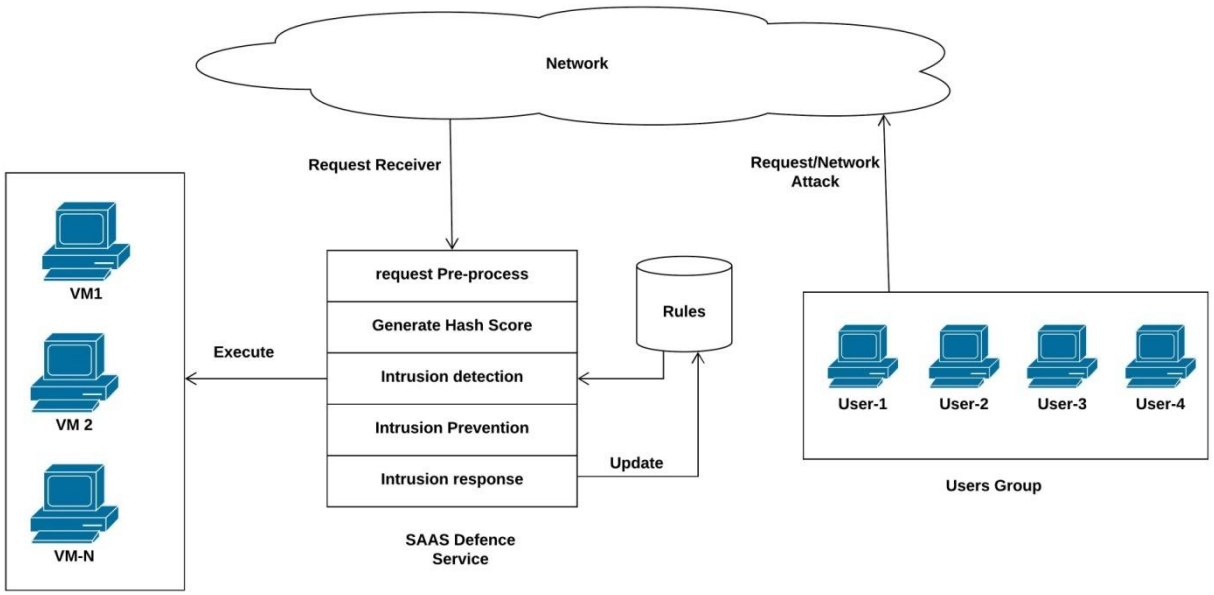

Figure.1 : Proposed System architecture view

Certificate Authority: Certificate Authority is liable for the construction of the system by setting up system parameters and attribute public key(PK) of each attribute in whole attribute set.

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Attribute authority: Attribute authority attentions on the attribute management and key generation. AA conjointly be able to the complete attribute set , some one of the AA can not allocate users secrete key alone for the master key is shared by AA.
Data Owner: Owner encrypts his/her file and define contact around who can get right to use to his/her data. Owner encodes his/her data with a symmetric encryption algorithm .Then the holder(owner) formulates right to use policy over an attribute set and encrypts the symmetric key underneath the strategy rendering to attribute public key enlarged from CA .
Data Consumer: In this part, Users are taking confirmation and safety to admittance the detail which is obtainable in the structure. Previously accessing the details user should have the account in that otherwise they should register first. CA can assign user identity uid and password to data consumer.[1]
Public Cloud Server: An entity which is achieved by cloud server provider to provide data storage services . In cloud data storage , a user store his data in cloud server .In cloud data stowage system , user collection their data in clouds and no lengthier retain the data close by. Thus the exactness and accessibility of the data files being stowed on the dispersed cloud server necessity be definite.

IV. CONCLUSION AND FUTURE WORK

This investigation explains a revocable multi ability ABE scheme that can support efficient attribute overturning. One of the auspicious upcoming works is to make known to the effectual user revocation appliance on top of proposed anonymous ABE. Supportive user revocation is an vital issue in the real application, and this is one of the greatest challenges in the application of ABE systems. Making this scheme well-matched with current ABE schemes, support effective user revocation. The current architecture is actual effectual for security purpose, but sometime its utilized multiple resources. When the such system allocate multiple resources it will generate a portion of dependencies. For the next research is we can effort on minimum resource utilization with system flexibility like power, VM's, network, memory etc. The below objectives we can consider for future enhancement.
1. Explore the challenges and requirements of forensics in the virtualized environment of cloud computing
2. Design a digital forensic framework for the cloud computing systems from the view point of investigator and/or cloud architecture
3. Address the issues of dead/live forensic analysis within/outside the virtual machine that runs in a cloud environment
4. Using digital forensic triage in the examination and partial analysis phase of cloud forensics

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