

Two Level Block Chain Based Access Control Over Cloud and Fog



Bathala Lakshmi Sindhiya , K.C.PrabuShankar

Abstract: Various admission regulator mechanisms found are Attribute-based Controlled Collaborative Access Control Scheme, novel block chain-based distributed key management architecture (BDKMA), Pri Guarder a novel privacy-aware access control method, Lightweight admission switch. Security enquiry displays the suggested arrangement assurance documents secrecy then has several extra severe care things. Examination displays the projected system is effective in relations of loading plus calculation.

Keywords: Access Control, Block Chain, Cloud, Data Storage.

I. INTRODUCTION

The technology used here is cloud computing. The word cloud is brought when many of the companies or industries started using some big storage cans. The technology related to cloud is called cloud computing. Cloud computing has brought many changes in the technical world which are more advantageous and useful in this realistic world. Cloud computing is a technology uses internet and mass huge sums of documents as well as also store its related applications. Cloud is used to mass huge sums of files so this is why almost people use cloud. And this technology provides a great flexibility to update ,access and maintain data from anywhere. The biggest need of fog computing is storage facility and convenience to register and store data safely. Few advantages of cloud computing are few costs , flexibility in capacity and enhanced collaboration. Some mechanisms are available to store data on cloud, the existing access control mechanisms available are Attribute based controlled collaborative access control scheme , novel block chain based distributed key management architecture(BDKMA).

Some disadvantages regarding these mechanisms are privacy , security , after encryption it is difficult to change as access policies were already formulated , permission authorization, expensive Block chain technology is a constantly growing ledger which keeps a permanent record of all the transactions in a secure and immutable way.

This technology is used wide range on business applications and many more. There are some factors for block chain which made it very useful are time reduction, security, collaboration, decentralization, unchangeable transactions and reliability. Block chain helps a lot in access control with its proper- ties i.e end-to-end security and encryption. This erases the risk of human errors and safeguards against other attacks.This Cloud computing now been using everywhere as this became the latest technology .Block Chain technology is used in this project in order to make chaining between transactions or encryptions.

II. EXSISTING SYSTEM

Existing system has many disadvantages like its secure levels are low and there is more unwanted data stored on cloud.Block technique is not used in this system only encryption techniques are used . And number of levels used is also low when compared.The disadvantages in this existing system are privacy lacks , no encryption and decryption a any number of users can access at a time.these are the disadvantages.

I. PROPOSED SYSTEM

Various admission regulator mechanisms found are Attribute-based Controlled Collaborative Access Control Scheme, novel block chain-based distributed key management architecture (BDKMA), PriGuarder a novel privacy-aware access control method, Lightweight admission switch. Security enquiry displays the suggested arrangement assurance documents secrecy then has several extra severe care things. Examination displays the projected system is effective in relations of loading plus calculation.

3.1 Advantages of Proposed System

As may encryption and decryption techniques are used security does not lack and more privacy is present. Only one member can access the page at a time. This helps the data not to get duplicated. As three levels of layers are used, the data processed and stored in a separate folders or layers.

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II. LITERATURE SURVEY

STATE OF THE ART (LITERATURE SURVEY)

	Authors	Paper Title	Access Control Mechanism Used	Advantages	Disadvantages
1	Yingjie Xue, Kaiping Xue, Na Gai, Jianan Hong, David S. L. Wei, Peilin Hong	An Attribute-Based Controlled Collaborative Access Control Scheme for Public Cloud Storage	Attribute-based Controlled Collaborative Access Control Scheme	1) Data Confidentiality 2) efficient storage 3) computation overhead	1) Privacy 2) Security
2	CHAOGANG TANG 1, SHIXIONG XIA1, CHUNSHENG ZHU 2, AND XIANGLIN WEI 3	Re-definable access control over outsourced data in cloud storage systems	RDAC utilises identity-based encryption (IBE) and attribute-based encryption (ABE)	1) Data privacy	1) After encryption it is difficult to modify as access policies were already formulated.
3	MINGXIN MA, GUOZHEN SHI2, FENGHUA LI3	Privacy-Oriented Block chain Based Distributed Key	novel block-chain-based distributed key management architec-	1) Cross-domain access. 2) Decentralization, 3) Fine-grained	1) overhead of certain UEs and

		Management Architecture for Hierarchical Access Control in the IoT Scenario	ture (BDKMA)	auditability, 4)High scalability, 5)extensibility	SAMs is low
4	Zhigang Zhang ^{1,2} , Chaowen Chang ¹ , Zhimin Guo ² , Peisheng Han ¹	Phase Timing Optimization for Smart Traffic Control Based on Fog Computing	Non-centralized approach	1)Results are clear.	1)Used in any way.
5	QingqingXie*,GabyG.Dagher	Flexibly and Securely Shape Your Data Disclosed To Others	Fine-grained access control	1)Flexibly	1) Use extensive experiments to validate its performance
6	KHALED RIAD 1,2 , RAFIK HAMZA 1,3, AND HONGYANG YAN1,3	A Novel Algorithm for Estimating Purchase Incentive of the Public Based on Mobile Cloud Computing	Evolutionary algorithm	1)Checks minute things .	1) construct more datasets

7	Hiba Asri1, Hajar Mousannif2 and Hassan Al Moatassime1	Reality mining and predictive analytics for building smart applications	Real world data and clustering validation statistics	1)Good matching between clusters	1)No accuracy.
8	NGOCTHANHDINH AND YOUNGHANKIM	An Energy Efficient Integration Model for Sensor Cloud Systems	Novel information-centric prediction-based integration model	1)Data transmission 2)Suppression ratio 3) Energy usefulness 4)Response latency	1) More time taking.
9	Ximu Zhang, Min Jia , Xuemai Gu, and Qing Guo ,	An Energy Efficient Resource Allocation Scheme Based on Cloud-Computing in H-CRAN	Power allocation algorithms	1)Energy consumption of baseband and improve the EE of the system.	1) nil.
10	Anwer Al-Dulaimi, Saba Al-Rubaye, and Qiang Ni	Energy Using Cloud Management of LTE Networks Employing Fronthaul and Virtualized Baseband Processing Pool	Graph-coloring scheme	1)useful performance	1)Additional power savings
11	QIANG WANG, WENCHAO LI , AND ZHIGUANG QIN	Proxy Re-Encryption in Access Control Framework	Proxy re-encryption(PRE) scheme	1)Secure 2)Computation cost and communication complex-	1)Execution is little harder.

	Hong	With Multiple			
23	BO LANG, JINMIAO WANG, YANXI LIU	Achieving Flexible and Self-Contained Data Protection in Cloud Computing	RBAC	1)privacy 2)no security issues.	1)nil
24	XIAOYU LI1, SHAO-HUA TANG1, LING-LING XU1, HUAQUN WANG2,JIE CHEN3	Two-Factor Data Access Control With Efficient Revocation for Multi-Authority Cloud Storage Systems	Attribute-based access control scheme	1) constant-size ciphertext 2)small computation Cost	1)No access to all.
25	FAWAD KHAN1,2, HUI LI2,LIANGXUAN ZHANG2	Owner Specified Excessive Access Control for Attribute Based Encryption	Attribute-based encryption (ABE)	1) secure	1)Flexibility

III. SYSTEM ARCHITECTURE

Our system architecture is shown in Figure 4.1. This proposed model has three layers ,they are cloud , fog and device layers. Two levels of block chain model is proposed i.e block chain level 1 and block chain level 2. During the encryption of file initially the file is encrypted in three levels ,encrypt level 1 ,encrypt level 2 and encrypt level 3. Each encrypt level produces keys , key 1, key 2 and key 3. Next step is that the encrypted level and keys combines to form encrypted key 1 ,2 ,3 separately. And finally these are stored in three different servers .

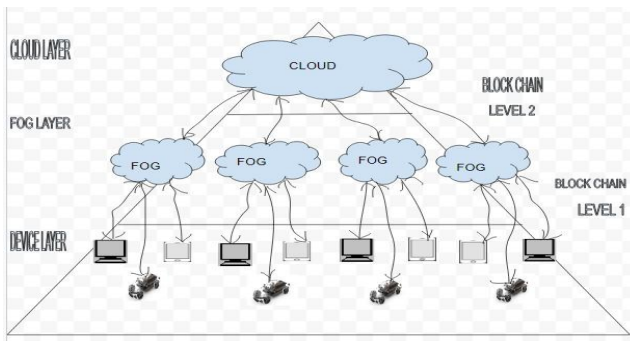


Figure 5.1: System Architecture

Two levels of block chain model is proposed i.e block chain level 1 and block chain level 2. During the encryption of file initially the file is encrypted in three levels ,encrypt level 1 ,encrypt level 2 and encrypt level 3. Each encrypt level produces keys , key 1, key 2 and key 3. Next step is that the encrypted level and keys combines to form encrypted key 1 ,2 ,3 separately. And finally these are stored in three different servers .

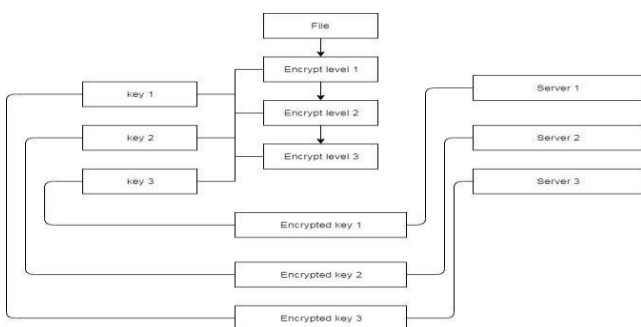


Figure 5.2: UML State Diagram

UML Diagram 4.4 shows different processes and states. Two levels of block chain model is proposed i.e block chain level 1 and block chain level 2. During the encryption of file initially the file is encrypted in three levels ,encrypt level 1 ,encrypt level 2 and encrypt level 3. Each encrypt level produces keys , key 1, key 2 and key 3. Next step is that the encrypted level and keys combines to form encrypted key 1 ,2 ,3 separately. And finally these are stored in three different servers .

IV.SYSTEM IMPLEMENTATION

6.1 Consensus in Block Chain

Block chain is a decentralized network ,it provides security , privacy, immutability and transparency. There is no particular central authority to examine the transactions, even though every transaction is secured and examined. This is possible only because of the presence of consensus protocol which is a central part of block chain. This Consensus algorithm is a procedure with which all other members of the network reach to a common point about the exact or particular state. In this way this algorithm gains reliability in network and gains trust in between other persons of group.

6.2 MODULES

1. REGISTER

This registration is the initial step in this process. Two users register with different usernames and passwords and with some other data.This registration process is compulsory .Without this process anyone cannot enter into next step in the process. One cannot skip this step.

2. LOGIN

A user logs in through his data and if it is correct data then she/he can upload a file and the file performs three levels of encryption and keys are generated separated and encrypted keys are stored on different servers as explained before.

3. REQUEST

Other user logs in through his/her details and requests a needed file which is uploaded ,the requested file will be accepted by the user and then the other user who requested it opens that file and decrypts to know the original data .

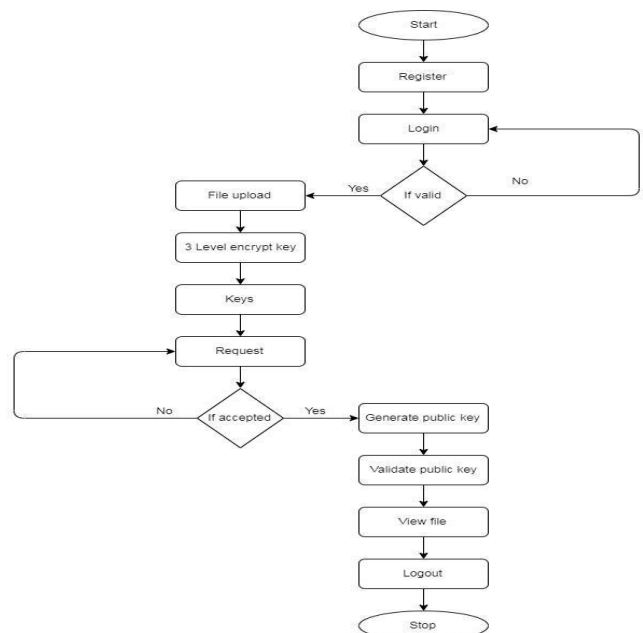
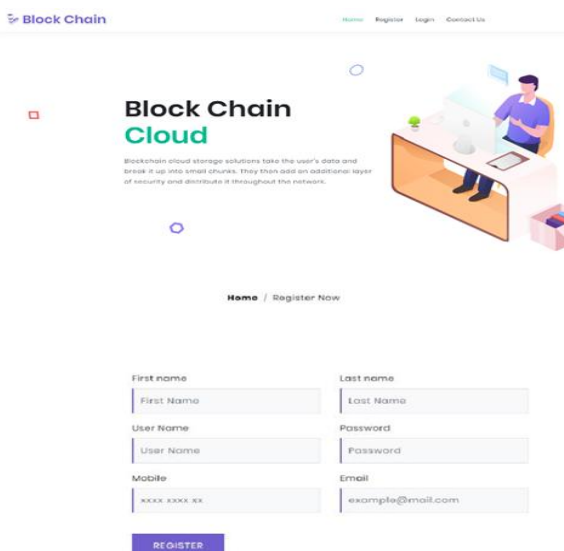


Figure:6.2.1 state diagram

Steps for the above diagram

1. Start the process step by step.
2. Register with the credentials.
3. Login with the registered credentials.
4. If the login details are correct upload a file else go back to login stage.
5. After file uploading three levels of encryption takes place.
6. And in this step keys are generated which are numbered three .
7. Now requesting step comes into action and if the process is accepted a type of procedure occurs and if it is not accepted other type of procedure takes place.
8. If it is accepted the a public key is generated as per above norms.
9. If it is not accepted then it goes back to request state , no one can change this step.
10. From 8 step , After generating public key , it validates the public key.
11. After public key validation file is viewed. This is the original file thus viewed.
12. The user who is logged in gets out of the page that is he/she logs out.
13. Process Ends.

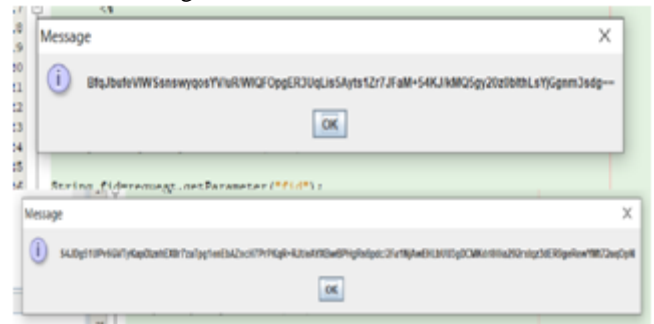
VII. IMPLEMENTATION RESULTS



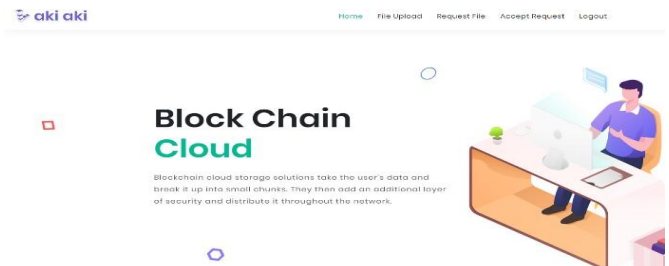
This is the home screen when the project is once started . The home age contains the options to register , login and contact us. Making use of this register page , any one can fill u their details to become a member. The member who first

registered is named as number1. And the other member who registered is named as number2.

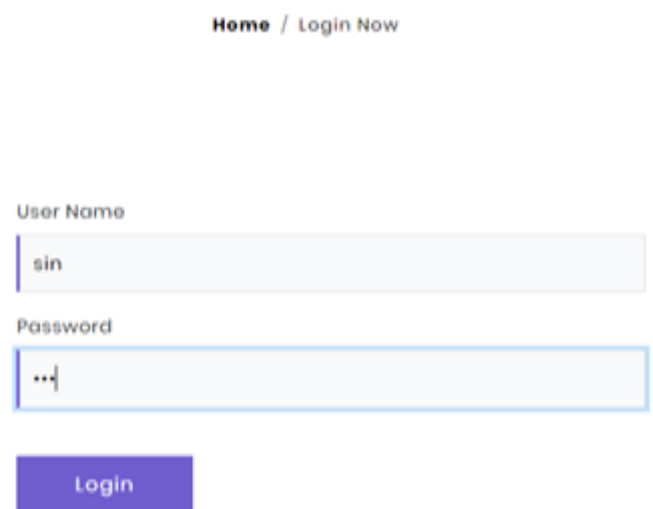
In the register page the details to fill are first name , last name , user name , email , mobile number and password should be set by the registered member and it should be remembered. After successful registration the two members can login .



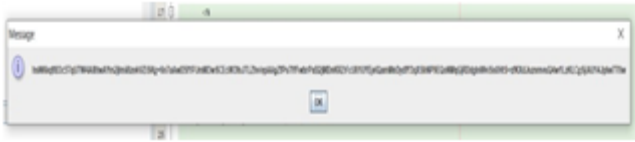
This is the login page , here username and password which you have set before should be used and you can login using those credentials.



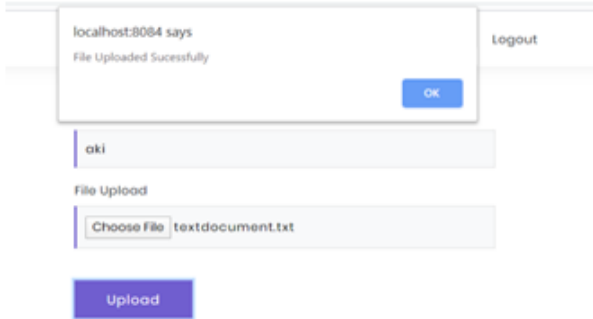
After logging in using aki name , the page appears as above and can see the file upload option , request file and accept file and logout options. Now aki as a user logged in and now will upload a file which is in text format. And then logs out.



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While uploading a file three encryptions occur .There are three levels as shown in above figure.



Note that the equation is centered using a center tab stop. Be sure that the symbols in your equation have been After successful uploading a file with three levels of encryptions it displays the message as file uploaded successfully.After the display of the message the current user logs out and the other user logs in.

Home File Upload Request File Accept Request Logout

File Id	File Name	Owner Name	Owner Email	Request
1	textdocument.txt	aki aki	akhleshpv99@gmail.com	Request
3	textdocument.txt	aki aki	akhleshpv99@gmail.com	Request
5	textdocument.txt	aki aki	akhleshpv99@gmail.com	Request

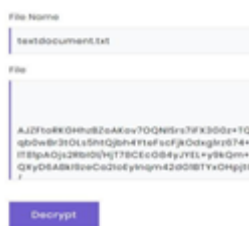
Now the uploaded file will be here and the other user who needs that file requests the file by clicking that option which is request .And after requesting the user comes out of that page.

aki aki Home File Upload Request File Accept Request Logout

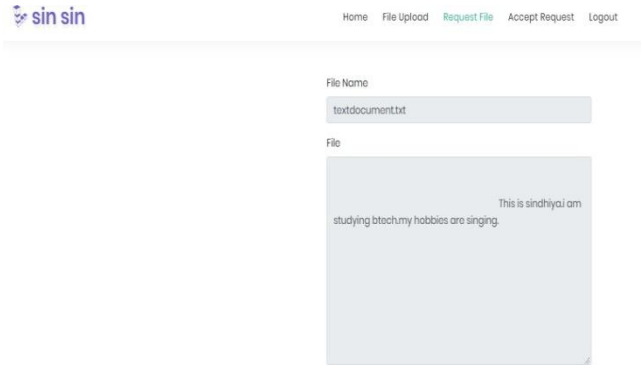
File Id	File Name	Requester Name	Requester Email	Accept
1	textdocument.txt	sin sin	akhleshpv99@gmail.com	Accept

Now the requested file after accepting it can be opened by the user by clicking the open option.

sin sin Home File Upload Request File Accept Request Logout



After opening it we can see a decryption where we can decrypt it and can get the original document .



Here's the original document which we uploaded.

VIII . CONCLUSION

Here we are with consensus algorithm to store data on cloud using block chain technology. This algorithm made the data secure and this tech nology is implemented as it is so flexible to store data from anywhere around the world. The simula- tion outcomes show the data stored on cloud using block chain so safe as encryption and decryption are performed.

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