International Journal For Technological Research In Engineering
Volume 1, Issue 10, June-2014 *ISSN (Online): 2347 - 4718*

OPTIMIZATION IN PERFORMANCE AND SECURITY IN CLOUD STORAGE

Mr. Patel Nildip C[1] (Student), Mr. Patel Hardik A[2], Mr. Vinitkumar Gupta[3]
[2]Deptartment of Information Technology, Grow more Faculty of Engineering
[1,3]Deptartment of Computer Engineering, Hasmukh Goswami College of Engineering.
Gujarat, India.

Abstract: ***The cloud computing is next generation architecture of an IT industry which provides services on demand through Internet. In contrast to the traditional approach where services are under proper physical, logical and personal controls cloud computing moves application, software and database to the large data centre where the management of the data and services may not be fully trust worthy as customer are not allowed to monitor the under-laying physical infrastructure. Cloud infrastructure spans across the world, and it's not visible to user so that many user hesitate to migrate to cloud. That's why it is essential to provide data security at storage level, so that user can efficiently stores data in cloud which will improve trust of user in cloud. As data security issue is very crucial issue. So that user can find out most efficient one for their data storage. This will improve data storage efficiency and user trust in cloud. So data integrity is main problem over here so that here some encryption method like DES Algorithm to encrypt data for storage will apply to data which user want to upload over cloud. Here data file will be splitted in parts after that splitted parts will be encrypted and it is uploading to the cloud storage.***

Index Terms: Cloud Computing, Security, Security Issues, Data storage.

I. INTRODUCTION

Cloud computing is a most popular technology in today's world. Key to definition of cloud computing is "cloud" itself. Cloud is a group of interconnected computers. Cloud provides computing power to different nodes. Cloud provides many of services so user can utilize all services for their purpose. The platform provides on demand services that are always on, anywhere, anytime and anyplace. Cloud of computers group extends to single enterprise or company. The services and data used by cloud are available in vast group users, cross platforms and cross enterprise. All services are available if and only if internet is available. Cloud computing is in many ways an ample of several different computing technologies. In cloud computing concepts like virtualization, grid computing, autonomic computing, Service oriented architecture (SOA), ubiquitous computing and peer-to-peer (P2P) computing. Cloud computing provides many services. Those are Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS). These three are main services of cloud computing. In other services it provide Database as a Service, Control as a Service etc. Cloud computing also represent some of deployment models that are, i) Public cloud - A public cloud is a set of computers and computer network resources based on the standard cloud computing mode. In which a service provider makes resources, such as storage and applications, available to

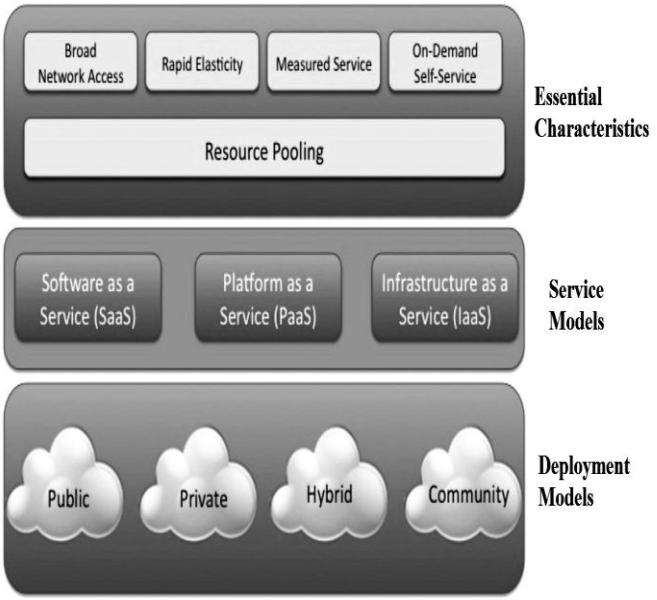

Fig 1 Cloud Infrastructure

the general public over the Internet[1]. Public cloud services may be free or option as a pay-per-usage model [2].Storage, applications, and other resources are made available to the public by a service provider. There are service providers like Amazon, Microsoft or Google. ii) Private cloud – Private cloud is a phrase that used to describe cloud computing deployment model under the corporate firewall. It used to implement for giving same benefits as the public cloud user gets but difference is that in this model objections of the user get decreased. In this model security is greater than public cloud. iii) Hybrid cloud – In hybrid cloud both cloud advantages are taken. If any company want to uses private and public cloud then it provides in the hybrid cloud so that company did not have to pay extra charges for both cloud models. Hybrid cloud serves both security and flexibility. iv) Community cloud –Community clouds are clouds that are shared needs of a business community. In community clouds provides to understand the business processes in cloud and at very high level of security with the hybrid model. Cloud computing provides some services. Following are the basic

services which are provided by cloud computing.[11]

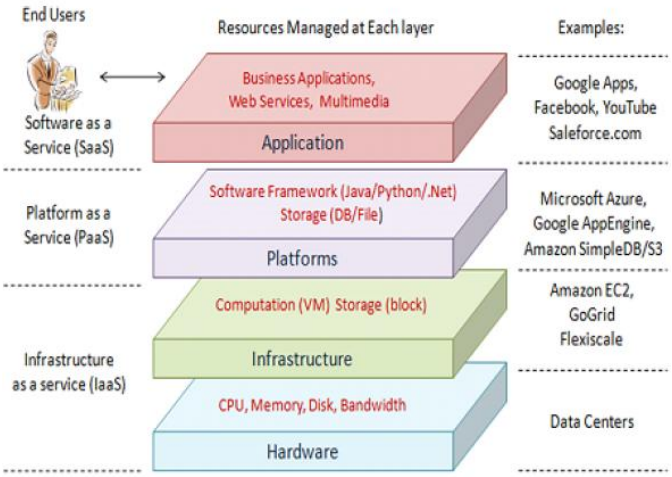

Fig 2 Cloud service models

A. SaaS(Software as a Service)- Any organization can purchase software or service according to their requirement and the amount to be paid for using this service is depended on the number of users. Sometimes it happens that users do not need entire software instead they just need some function of that software. At this time SaaS allows user to customize the software according to their organization's requirement. The other most importing thing about SaaS is users do not need to install any software on their local machine and can use all services through internet. SaaS service is very popular in industries as they do not need to worry about software installation and maintenance of local machines. They start saving money and time by reducing the size of IT department in an organization. Ex. Google docs.

B. PaaS (Platform as a Service)- Even though SaaS provides some level of software customization Sometimes organization demands for such a unique software application that SaaS service can't fulfill the requirement of organization. For this unique service PaaS is better option. PasS service model provides the interface, testing environment, hosting services and workflow facility so that users can develop their own software application that fulfill the needs of organization. The development of own software application requires lots of skills. For this organization hire highly qualified consultant. The consultant performs all the tasks from initial planning to the deployment. They directly provide GUI based software to the client ensuring them that this new software will integrate with the existing one. Best Example of PaaS is Google App engine.

C. Iaas (Infrastructure as a Service)- An expensive part of IT companies is infrastructure. To help them, cloud computing provides IaaS, Organization can purchase an entire infrastructure including servers, network, software's, storage and etc. based on requirements. This service will also help companies that have not enough space to create their own data centers. So by using this service organizations are free from the huge expense of building up their own infrastructure. Best example of IaaS is Amazon web services (AWS).

II. SECURITY ISSUES IN CLOUD COMPUTING

Cloud computing is evolving technology so that it is not developed fully. Cloud computing stores data online or provide on demand services. By that advantage it is virtual to the user so that user cannot defend on attacks. Cloud computing is the new system so there are some security issues occurs. Because of that user cannot trust upon new comer system absolutely.

Security Issues [4] –

- Abusive use of cloud -
- Insecure APIs
- Shared Technology issues
- Long term Viability
- Account or Service hijacking
- Data Location
- Data Loss or leakage and Integrity issues
- Data ownership and Reliability Issue
- Legal and Contractual issue

III. PROBLEM STATEMENT

In Cloud computing there are many issue but all of them the security issue is in the focus. In security the main focus is all about data integrity, so in analysis the author maintains data integrity but not surety of data integrity [10]. In cloud computing the integrity will compromised or some other user uses data of other user so that here data integrity does not maintain so by this data security problem occurs. Any data relies on the one node so that someone steals user's data so that here data again compromised. So the new idea of rely data on to the different node by dividing the data into some small chunks by encrypt it. In our system the data will be divided into blocks and it will be encrypted and uploaded on the server now this data will be on distributed over the different node of the cloud storage so the security is provided more and the access of all nodes is not available for all users. This data on distributed node is completely encrypted so that the data will be secure over the cloud storage.

IV. PROPOSED SYSTEM

Cloud computing provides storage services. Amazon provides Simple storage service (S3) for storage purpose. Customer will create account and then stores the data over the cloud. Now here data will be uploaded to the cloud by internet connection, but data is not always connected with the client when client will logout from their account at that time data will rely on servers. These servers are not known to the client. So at some point user need safety of their data or protection on their important data so in our work the data will be protect from the client side. Our system used cryptographic approach to secure clients data. Suppose client wants to store their data to cloud storage so client selects the data to be uploading. Here in our system data or file will be divided into same size blocks. By dividing into blocks data will be more secure than before. But this splitting of file will be done easily by joining it. So here some cryptographic approach must be apply. In our

system for the security we apply DES algorithm to encryption of that split files. DES encrypts each and every block with the block cipher. We used DES here because of performance of the symmetric key cryptography is high. It also uses less power to execute. The DES key is stored under the system by which data is used to upload. So that whenever we retrieve that data from cloud then we can decrypt the encrypted files.

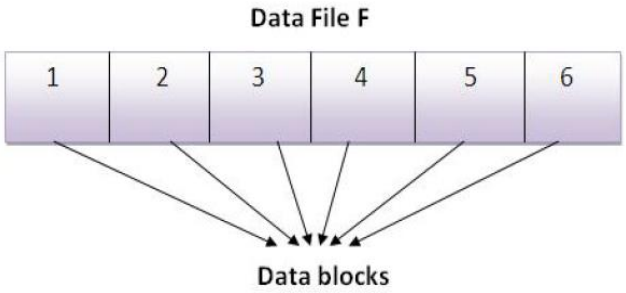

Fig 3 A data file F with 6 data blocks

Clouds support GUI based and without GUI for uploading. In our system data is uploaded by command line.

V. CONCLUSION

Cloud computing is a new trend now a days in IT industry. It explores the new area for research. Security and data integrity is a main concern for cloud service provider, so development of security is needed for secure data storage. Our proposed system let the user to assure that their data will not be compromised or stolen from the cloud storage. It also helps the cloud user to overcome from data integrity issue, Because of our system provides data storage with the fragments of any data to single node or different nodes that is why any data or any file will not be fully usable to the others. In additional these encrypted files are in fragment form and that fragments are encrypted by DES algorithm while whole bucket is open with the key which is generated by RSA algorithm. So in this way this formation of algorithm is very securely stored on a node in cloud storage.

VI. FUTURE WORK

Our proposed system uses DES algorithm to encryption of data, In place of this DES algorithm we can use any other encryption algorithm which is used to encryption of data, and provide web service that can be used by any cloud provider. In future a parameter server load and auditing and monitoring can also be considered.

REFERENCES

[1] "Defining "Cloud Services" and "Cloud Computing"". Blog. IDC. Retrieved May 30, 2013.
[2] "What is public cloud?" Definition from Whatis.com
[3] Jianfeng Yang, Zhibin Chen, "Cloud Computing Research and Security Issues", ©2010 IEEE.
[4] Balachandra Reddy Kandukuri, Ramakrishna Paturi V, Dr. Atanu Rakshit, "Cloud Security Issues" 2009 IEEE International Conference on Services Computing.
[5] http://en.wikipedia.org/wiki/Cloud_computing.
[6] Sameera Abdulrahman Almulla, Chan Yeob Yeun, "Cloud Computing Security Management".
[7] Wentao Liu, Research on Cloud Computing Security Problem and Strategy, ©2012 IEEE.
[8] Anas BOUA Y AD, Asmae BLILA T, Nour el houda MEJHED, Mohammed EL GHAZI, "Cloud computing: security challenges". ©2012 IEEE
[9] I-Hsun Chuang, Syuan-Hao Li, Kuan-Chieh Huang, Yau-Hwang Kuo, "An Effective Privacy Protection Scheme for Cloud Computing", @ ICACT2011
[10] Sravan Kumar R, Ashutosh Saxena , "Data Integrity Proofs in Cloud Storage". @ 2011 IEEE
[11] Qi Zhang, Lu Cheng and Raouf Boutaba, "Cloud computing: state-of-the-art and research challenges", J Internet Serv Appl (2010), Springer, Pp 7-18.

