



AUTHENTICATED SMART CARD APPLICATION USING MULTI CROSS CLOUD TECHNOLOGY

Sujolincy J¹ and Murari Devakannan Kamalesh²

¹Computer Science and Engineering Sathyabama University Chennai, Tamil Nadu, India

²School of Computing Sathyabama University Chennai, Tamil Nadu, India

E-Mail: lincyjoseph93@gmail.com

ABSTRACT

This paper is an emphasized application based on the storage of large amount of data using various cloud storages and the data retrieval with the help of hadoop the process is done in a distributed environment. In this application an RFID card is used to provide unique id to each user. And unique id helps in retrieving the user data in a easy way from different cloud storage. The data from the distributed system are retrieved successfully in a document format with the help of hadoop source. The combination of all this process gives a authenticated and successful application which gives a user friendly environment which can be accessed from any location. The location feasibility is due to the cloud technology.

Keywords: RFID, feasibility, authenticated.

1. INTRODUCTION

Cloud computing and Big data are the two main technology that are in a high race now days. Both the technologies are used in many IT industries because of their large storage and security. Data that stored in cloud are not harmed and big data supports in huge integration of data. But day by day the amount of data accessed by user in the society through internet is high and user prefer cloud storage because of the feasibility, elasticity and security. The rate of data that is uploaded by a single user more 90% for a single. If the user level is in million then they require large storage, so that now days all the social medias are trending in cloud storage and big data access. When they use this the duplication and access of data becomes easy to the organiser who maintain it. To make it more effective the cross cloud technology is been introduced.

Cross cloud is a complicated process and it is still in the process of research. But if this method is used with some effective algorithm, the storage, accessing of data and retrieval becomes very simple. So that data stored by the user will not overflow or collision of data will not occur. By integrating the cross cloud and big data concept we can store a large amount of data. Using cross cloud we can store data in a distributed way with the help of hadoop. Because hadoop is said to be distributed environment that is used to access data in a distributed way. The access of different file system can be done with the help of this system. So cross cloud and big data are integrated to access large amount of data in a flexible and easy way.

2. RELATED WORKS

[1] According to the work of author Antonio Celesti et.al (2010), a new idea of processing multiple cross cloud structure the period when this cross cloud service has been done which is used to integrate large volume of data. So the level of data storage in cloud can be increased based on interconnecting of cloud with each

other. This process is complex but still authors are trying to achieve best cloud integration. In this work author has great level achievement in processing cross cloud with a successful result. And the processing rate will be high and cost is low. So that we can implement this process large integration purpose. As the result of cross cloud we get easy storage with the help cloud storages and level of storage capacity is also high. [2] In this paper, author Hsiao-Ying Lin and We Guey Tzeng (2012) has a great impact on processing a cloud service in a secured way, so that any of the user will not affect my any missing of data, duplication of data or accessing of data by third party person. Cloud storage is used for storing of data in a virtual server and when we use third party should not access the user cloud storage, so the author has used a secured data accessing using a primary key. So that when data is exchanged the data's will be stored in a secured way with a unique id and one can access the user without their knowledge. They will be used to share data in a secured way without has loss of data. As a result the author has introduced a secured way accessing data with a high level of security. [3] In his paper, author Liangzhao Zeng *et al* (2004), implemented there ideas in the Business process in web service is based on the quality of service (QoS) for the need of customer satisfaction. This quality of the product is done with the help of QoS system, which is used only in the task level process so that the product used during the task will give a best functionality and service to the user. This is the most important factor for the application that has been proposed for implementing in various tasks. And the service also based on the global needs so the beneficiary use of the product gets increased based on the quality of service they provide. As a result the end product of this application gives a satisfactory product to user with a good quality. [4] In this paper, author S. Nikkath Bushra *et al* (2014), In this the general cloud service is done without any change in the existing database so that all the data's are stored. There is no complication in this process this is a general cloud service



done but the main change is that a collective data from past to present are stored. And this data are maintained without any change of data or corruption in data. Result of this process the data are stored as it is provided by user if it is similar also. [5] In this paper, author W. Sharon Inbarani *et al* (2013), as the cloud storage users rapidly increases day by day. They use some cloud storage that are produced by different organisation. That is we use the third party cloud servers to store our data. But the drawback is our data are not secured, so the encryption technology so the data stored by user cannot be accessed by the third party and retrieval of data are done in an easy way without any leakage of data. This methods helps when the user process the third party cloud storages. This work results that the we are securely use other cloud servers without any issues. [6] According to work of author Shilpashree Srinivasamurthy *et al* (2013), in the paper the author had given a brief explanation about the cloud services and security. The author has defined cloud as a management which provide various services based on the software, application and its information. All this service plays a major role servicing different cloud based services. The work also based on the brief description about cloud in IT field. All the developing companies uses the recent technology, the best regnant technology of recent days is cloud because they have the best security and privacy services. So the work results that cloud is management based on the major sources of computing. [7] According to author E. Srimathi *et al* (2015), the ideas of the author in the increasing use of the Internet and progress in Cloud computing creates a large new datasets with increasing value to business. Data need to be processed by cloud applications are emerging much faster than the computing power. Hadoop, Map reduce has become powerful computation model to address these problems. Data in cloud applications rises extremely in agreement with the big data tendency. The Big data technology will play vital role in future technologies. Hadoop become the source of big data and the processing become with it. And the Map reduce is the other part of it which is mostly used in the retrieval part of a process. All this are put together by the author to bring a healthy set of process. As a result a large set of data is processed and retrieved. [8] In this paper, author Taotao Wu *et al* (2014), cloud storage plays a major scenario now a days and they are used storing data's and the author had a great work how to high performance measure in cloud services. The cloud service have a high elasticity and they can be used by the users for active user time. And many web services are based on cloud services. This technology has increased because of the secured service and flexibility provided by them. The secured service improves users will in accessing cloud services and the flexibility makes the user to have comfortable access of data from any location with the help of the web serviced provide by cloud. The above to factor makes the cloud service more reliable to users. So cross-cloud also increasing now a days because of the quality service provided by them. All the above services are

increased by the author to increase the quality of service provided by them. As the result the cloud service becomes the most easiest service and storage area where user gets a best quality service provided by them. [9] According to author Wanchun Dou *et al* (2015), the multi cross cloud is the concept that is going to included in this with that we are going to implement the big data application so that we can create an application for a large service which also has history of records. In this we can integrate the various types of cloud for processing. And with the help of k-means algorithm the data's are clustered. As result they stored only history of record for the users and also the accessing is easy because the storage is cloud that is the user can access data from any place. [10] According to the work of author Xuyun Zhang *et al* (2014), in big data applications, the process has been a large-scaled and data's used are in different cloud modules and the data's from it are clustered with k-anonymity which are related to k-means algorithm are used for map reduce process so that the required data is displayed immediately. The k-anonymity is the popular algorithm that is used for map reduce process in cloud and big data concept. This method was the best method to process and retrieve data in the time of processing cloud data. All this is based on an big data and cloud concepts. The best result out of this clustering is made easy with the help k-anonymity algorithm.

3. IMPLEMENTED SYSTEM

The implemented system is a real time application. The application is implemented in a user friendly environment. System process starts as the user swipes the RFID card and gets a unique id. If the user is new one they should register their detail. All the information entered by the user will be assigned to the registered card with a primary key. And all the registered information are stored in MongoDB. When the user sign in for the next time they will get enter into the web portal for authentication access.

The authentication is done for all the cloud storage that are used in that. Mainly Drop Box and Google Drive are the two cloud storage that are used in this application. The drop box is secured and it is allowed to access only when the user gives permission by clicking on the dialogue box that requests for access. The Google drive is also secured this is allowed to access by copying and pasting the URL that is auto generated by the system. When both the cloud storage are given permission to access the gets into the portal.

Now it gets in to the main application where there are three portal that is Ration card, hospital management and passport portal. If the person add the details in any one of the portal, all the data entered will be stored in the assigned cloud. In this application for storage distribution we can use balance partitioning algorithm. We can use this algorithm for storing data in a partitioned way. The data field used are pre assigned to each cloud in a partitioned way. So while the user entering the data on each field as



assigned previously the data are stored in the respective cloud storage. So the storage become easy using without any overflow or collision of data. Then all the data are stored in a assigned way without any complication in a fastest way. Then the user can view the data they entered already from anywhere and at anytime. Because the retrieval process is made easy with the help of hadoop concept. Because hapdoop helps in processing data in a distributed environment, so data from the distributed environment can be collected using the hadoop technology. Using this we can retrieve data any document format that is it may in table or file format. All the entered data are viewed in the cloud portal we stored.

All the final result can be cumulatively retrieved in a table. The main concept whenever the user add data they are stored and we can collect history of record of the user. And the data we need can be viewed from any location. The main advantages of this application are mentioned below:

- High security
- Less time consuming process
- Reliable
- Less complexity

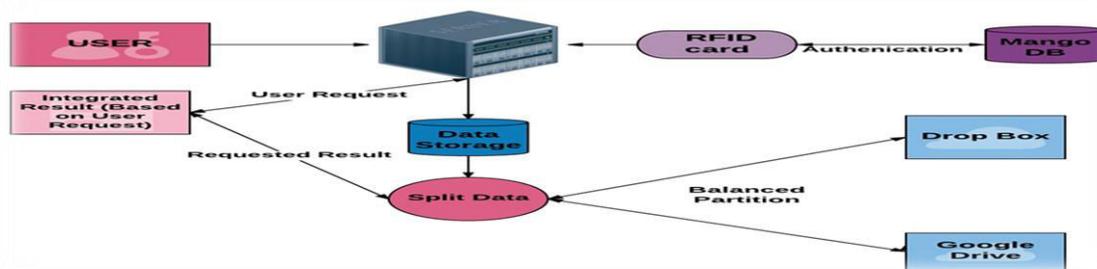


Figure-1. System architecture.

A. System architecture

The system architecture specified in Figure-1. gives a brief detail about the input and output processing of data. The input is the user data that are stored in the database. The data are processed and stored in cloud. Security process is mentioned to know the details of authentication provided to the system. The output data is the information that are entered by user are retrieved.

B. Flow for overall project

The flow of overall project is depicted in Figure-2 which provides how the entire project is incorporated using cloud storage. The entire flow process gives a clear view about the entire process and gives prefect architecture for flow of process. This gives a perfect view of the project. This is all about the overall flow of the project with their respective-modules.

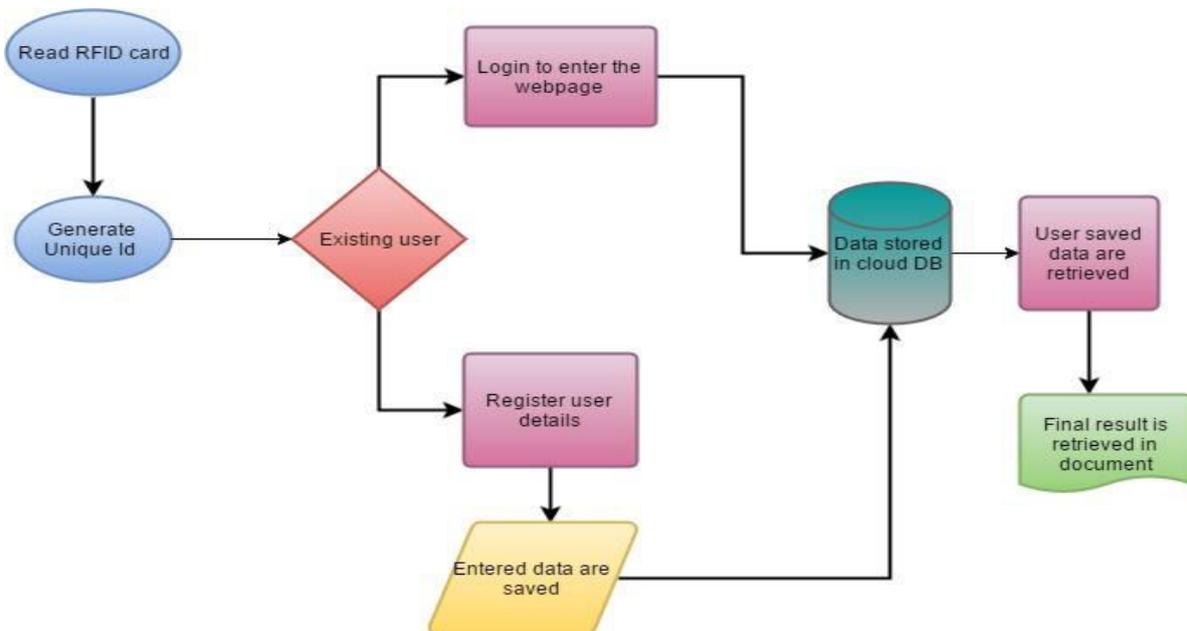


Figure-2. Flow for overall project.



C. Modules and description

The proposed work has been implemented as in 6 modules. They are described as follows:

- User Interface
- MongoDB setup
- Google Drive and drop box
- Big Data Setup
- RFID Authentication and user credentials
- Cross cloud retrieval

1) User interface

Here first the User wants to create an account and then only they are allowed to access the Network. Once the User creates an account, they are to login into their account and request the Job from the Service Provider. Based on the User's request, the Service Provider will process the User requested Job and respond to them. All the User details will be stored in the Database of the Data Service Provider. In this Project, we will design the User Interface Frame to Communicate with the Data Server through Network Coding using the programming Languages. Sending the request to Server Provider, the User can access the requested data if they authenticated by the Server.

2) Mongo DB

Here the details entered by the user are gets stored in the mongodb in a table or file format. The mongodb is a cloud base database which stores a document in table or file format as mentioned before. And mongodb is used as it is a cloud database.

3) Google drive and drop box

In this module we plan to deploy the two real time cloud one is drop box and another one is Google drive, we create an swing like application for the integration of cloud both Google drive and drop box, through the application the user get the registered and login to access the real time cloud .in this module all the user information are stored and kept in the above mentioned cloud.

4) Big data setup

The big data is a large storage area, we use the hadoop concept to store a distributed file data and all this data are retrieved with the help of this concept. This is the easiest way to retrieve data.

5) RFID authentication and user credentials

Client is an application which created and installed in the User's machine. So that we can perform the activities. The Application First Page Consist of the User registration Process. We'll create the User Login Page by RFID and Text Field password to the server. While creating username and password the RFID is stored in the database. Application, we have to design an page to authenticate the RFID to enter into the clouds.

6) Cross cloud retrieval

Cross cloud is based on multiple cloud services that are used for storage purpose. In this they use different cloud storage to access data and all the data different cloud are integrated and retrieved as a result.

D. Algorithm

Balanced partitioning algorithm

The Balanced Partitioning Algorithm is used to split the data in an equalized or balanced way. So that the weight age of data is balanced.

Description

This algorithm is designed to generate data in a balanced partitioned way. So that the entered data is partitioned equally based on the number of input data. So the data are easy to process. The main role of this algorithm is to have a balanced partition.

Algorithm

1. Let elements be from $\{a_1, a_2, \dots, a_n\}$ and total number of elements be n
2. Let N be the number of elements in S . Let K be the sum of all elements in S . That is: $K = x_1 + \dots + x_n$. We will build an algorithm that determines if there is a subset of S that sums to $[K/2]$
3. Now divide the sum of present elements and total number of elements
4. That will result is a subset, then:
 if K is even, the value S sums to $[K/2]$
 if K is odd, then the rest of S values sums to $[K/2]$

Summary

Balanced Partitioned is a simple algorithm for generating data that are partitioned and are also balanced. This is used to balance the weight age of data. Each and every data are kept balanced.

Input: The data that are entered by the user is the input data

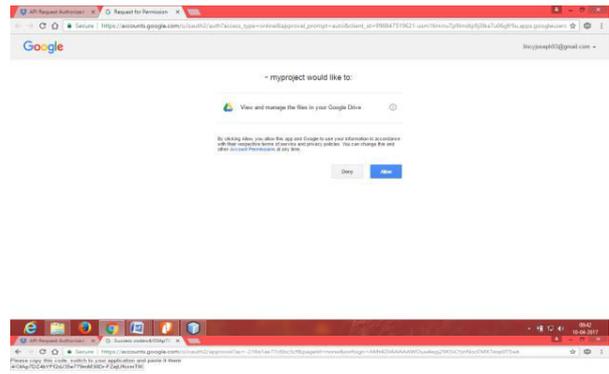
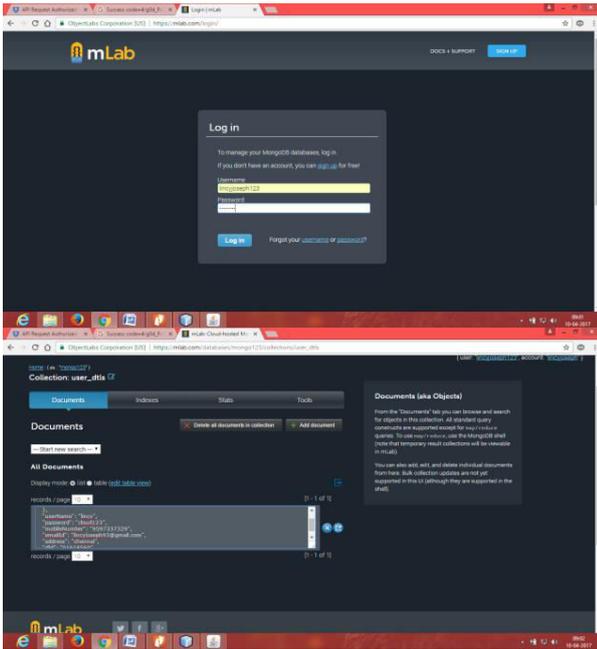
Output: Displays all the data that are entered by user in different time i.e. the history of data entered by the user.

E. Implementation (Screen shots)

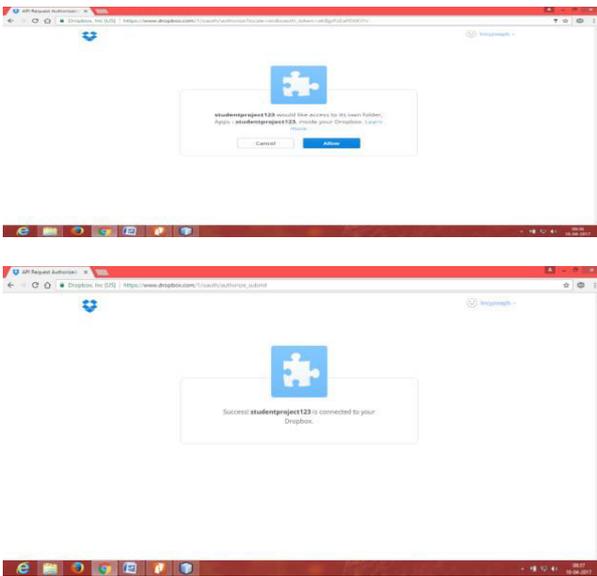
a. User registration



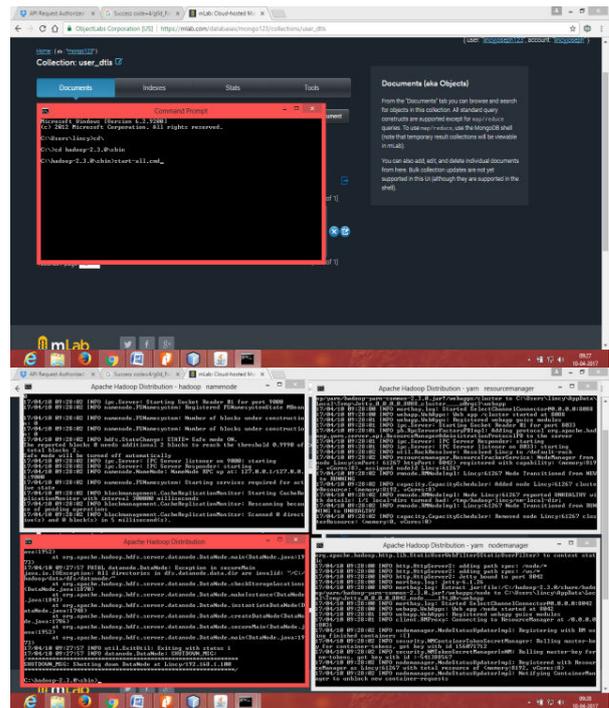
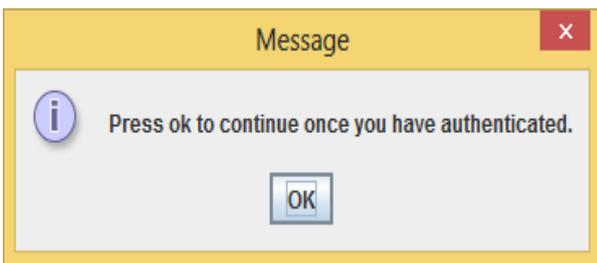
b. Mongo DB access

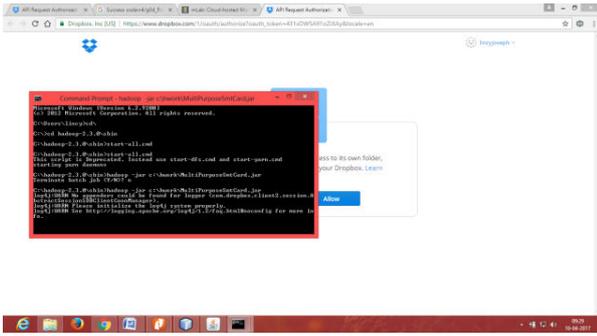


c. Google drive & drop box access



d. Big data setup

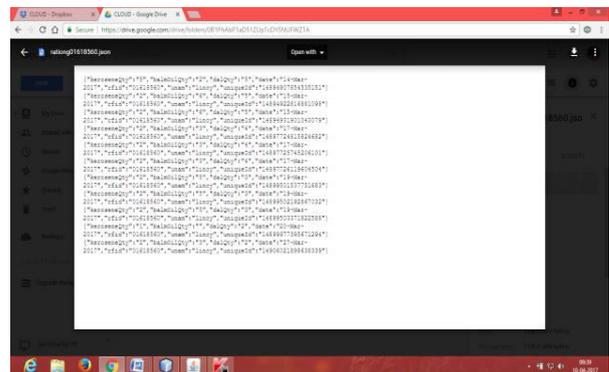
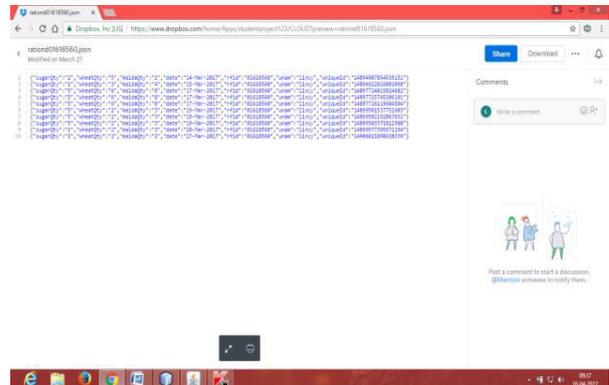
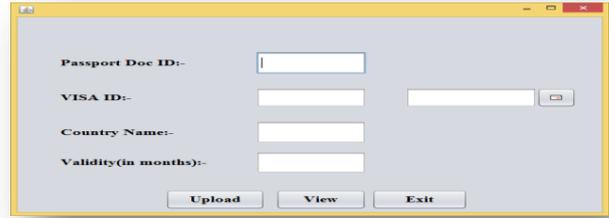
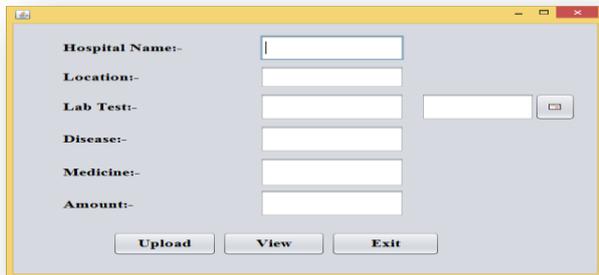
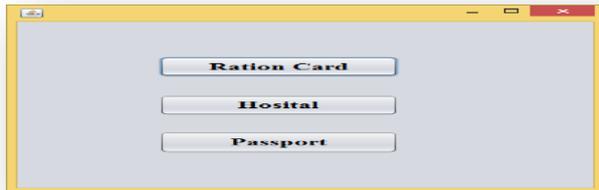




e. RFID authentication

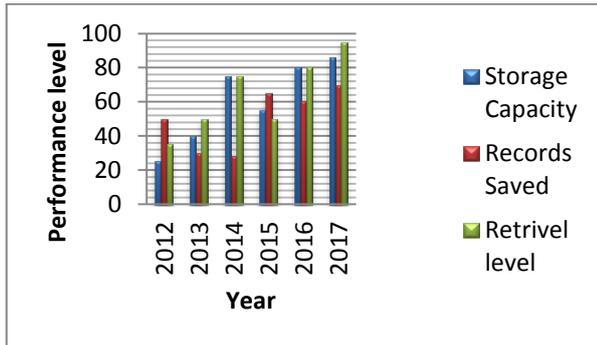


f. Data upload and view





F. Performance analysis



The above graph is showing the performance level of how much data are stores, the amount of data used and stored and at last the level of retrieval i.e. the speed in processing the data. The result is showing that the proposed technique of data that have been processed for last few years with relevant data and approximate result.

4. CONCLUSIONS

Storage is the most important factor for the technology enhancement. Because there are lot of online storage processors that can be used but it stored only to level and retrieval is complicated in such cases because of less security. But in this work it is discussed as an authenticated user process for storing data with the help of cloud servers and the big data services. Which are used to store data in a balanced way? And user request are processed with the help of big data. This concept reduces the manual way of storing data and the provided service which helps in viewing the history of record from any location in the world. Thereby concludes that the data are stored with the help of balanced partitioning technique and processed in a secured way without any interruption in the processing of data.

The future work in application of the cross cloud storage with the hadoop technology is an exploration always and it includes many things to be researched further. For Future work, there is a possibility of improving the clustering method with some new methodology of data cluster. So that the data clustering can be made in an advanced way.

ACKNOWLEDGEMENT

I thank Mr. Murari Devakannan Kamalesh, Assistant Professor, of Sathyabama University, for his guide, help and great support in my work.

REFERENCES

- [1] Antonio Celesti, Francesco Tusa, Massimo Villari and Antonio Puliafito. 2010. Three-Phase Cross-Cloud Federation Model: The Cloud SSO Authentication. Second International Conference on Advances in Future Internet. pp. 94-101.
- [2] Hsiao-Ying Lin, Member, IEEE, and Wen-Guey Tzeng, Member, IEEE. 2012. A Secure Erasure Code-Based Cloud Storage System with Secure Data Forwarding. IEEE Transactions on parallel and distributed systems. 23(6): 995-1003.
- [3] Liangzhao Zeng, B. Benatallah, A.H.H. Ngu, M. Dumas, J. Kalagnanam and H. Chang. 2004. QoS-Aware Middleware for Web Services Composition. IEEE Trans. Software. Eng. 30(5): 311-327.
- [4] Nikkath Bushra S, A. Chandra Sekar. 2014. An Efficient Incremental Clustering Method for Incremental Cloud Data. International Journal of Advanced Research in Computer Science and Software Engineering. 4(3):707-711.
- [5] Sharon Inbarani W, Shenbaga Moorthy G, C. Kumar Charlie Paul. 2013. An Approach for Storage Security in Cloud Computing- A Survey. International Journal of Advanced Research in Computer Engineering & Technology (IJARCET). 2(1): 174-179.
- [6] Shilpashree Srinivasamurthy, David Q. Liu, Athanasios V. Vasilakos, Naixue Xiong. 2013. Security and Privacy in Cloud Computing: A Survey. American V-King Scientific Publishing. 2(4): 126-149.
- [7] Srimathi E, K. A. Apoorva. 2015. Privacy Preservation in Analyzing E-Health Records in Big Data Environment. Ijritcc. 4: 2421-2427.
- [8] Taotao Wu, Wanchun Dou, Chunhua Hu and Jinjun Chen. 2014. Service Mining for Trusted Service Composition in Cross-Cloud Environment. IEEE systems journal. pp. 1-12.
- [9] Wanchun Dou, Xuyun Zhang, Jianxun Liu, and Jinjun Chen. 2015. HireSome-II: Towards Privacy-Aware Cross-Cloud Service Composition for Big Data Applications. IEEE Transactions. 26(2): 455-466.
- [10] Xuyun Zhang, Chang Liu, Surya Nepal, Chi Yang, Wanchun Dou, Jinjun Chen. 2014. A Hybrid Approach for Scalable Sub-Tree Anonymization over Big Data Using Map Reduce on Cloud. Journal of Computer and System Sciences. pp. 1008-1020.