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Extending Usability of Various Clouds Using OverClouded Approach

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ABSTRACT: With increasing utilization and popularity of the cloud infrastructure, more and more data are moved to the cloud storage systems. This makes the availability of cloud storage services critically important, particularly given the fact that outages of cloud storage services have indeed happened from time to time. Thus, solely depending on a single cloud storage provider for storage services can risk violating the service-level agreement (SLA) due to the weakening of service availability. To draw the maximum benefit from the cloud, it is desirable to implement cloud computing integration of the multiple enterprise applications needed for various business processes in an organization. This helps to configure multiple on-premise or the cloud applications to share data over the cloud. So, in our project, we are integrating multiple cloud providers in a single application. Users can have files stored on distinct clouds. User may prefer to store same files on different places or we can say on different clouds for safekeeping purpose. For that user needs to have separate application of that particular cloud. To access files stored on the different clouds, user has to login to different applications which consumes more time and space on the device. The solution to this problem is to have these different cloud accounts on one place. To achieve this solution, we are merging multiple clouds in one application. By using this application, user can access multiple clouds at a time without using their own application. It enables the user to access multiple clouds at the same time. Rather using different applications for all individual clouds user can access multiple clouds in one app. Here, user will enter in the app by login with gmail or facebook; this login is for authentication purpose. We are using different APIs for that. Each cloud is having different techniques and algorithms for reading as well as writing contents in cloud data storage. In project, we are using different techniques for different clouds in single application.

KEYWORDS: Cloud Computing, Cloud Integration, Integration in Android, Cloud Integration Algorithms, Client Server, File Access, Android API.

I. INTRODUCTION

The area of most current research has been limited in a single cloud. The seamless integration of manufacturing resources, data and capabilities on different clouds is still a research challenge. Similar demands can be found in the areas of smart factory, smart home and smart city, which are all in need of integrating services from different industrial clouds. This has led to the notion of Cloud-of-Clouds, where data redundancy is introduced to distribute data among multiple independent cloud storage providers, to address the problem. The key in the effectiveness of the Cloud-of-Clouds approaches lies in how the data redundancy is incorporated and distributed among the clouds. However, the existing Cloud-of-Clouds approaches utilize either replication or erasure codes to redundantly distribute data across multiple clouds, thus incurring either high space or high performance overheads. In this project, we are proposing an integration of multiple clouds, called OverClouded, to improve the cloud storage availability in Cloud computing by exploiting the workload characteristics and the diversity of cloud providers. With the increasing popularity and cost-effectiveness of cloud storage, many companies and organizations have moved or planned to move data out of their own data centres into the cloud. Typical usage examples include storing backup data and online digital media.

Now a days, cloud computing is an important concept used for multiple fields. Cloud computing stores and access data and programs over the internet. In our project we are integrating multiple clouds in single android



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application in which we are using different APIs for different clouds. Each cloud having different techniques and algorithms for reading as well as writing the contents in cloud data storage. In this application we are using different techniques for different cloud in single application by using this "OverClouded", we can access multiple clouds at a time without using their own distinct applications.

II. RELATED WORK

Several literatures on multi-clouds [1] [2] inspired us, however, the integration of multiple clouds oriented to manufacturing industry have their own characteristics and domain specific problems to address. This project tries to address these issues and is organized as follows.

Multiple clouds can also maximize their mutual benefit, which may actually promote the development of cloud industry[7]. Then enabling technologies in integrating multiple clouds and a preliminary implementation are presented. There are still many open issues to be solved. Our future works on the integrated environment of multiple clouds will be: (a) Integration methods of cloud services for service users and (b) Qualified suppliers and crowd sourcing problem. [8] As cloud storage becomes popular and cost efficient, more and more organizations and individual users will move their data to the cloud. Besides performance and security, availability of the cloud storage service is becoming increasingly more important for users. The notion of Cloud-of-Clouds is an effective approach to addressing the availability issue caused by the service outages of single-cloud storage providers. [3] As cloud computing is highly relevant, related work is reviewed in two categories, cloud manufacturing and cloud computing (a) Integration methods in cloud (b) Integration of multiple computing clouds. The integration of computing clouds mainly involves the information flow, while that of multiple clouds needs to further deal with the material flow and the capability-service flow, because hard manufacturing resource (e.g. materials, machine tools and robotics) and manufacturing capability (capability of accomplishing a particular task with competence, e.g. a design task and a production task) are also essential parts of the cloud integration. Thus the cloud manufacturing also needs enabling technologies, such as Internet of Things, big data and artificial intelligence to address manufacturing issues. On the other side, service contents are further expanded horizontally in the full lifecycle of product manufacturing (containing design as a service, production as a service, etc.). Thus the collaboration issues for integrating multiple clouds becomes more complex, involving information, material and capability-service flow[4]. HAIL [5] provides integrity and availability guarantees for stored data. It allows a set of servers to prove to a client that a stored file is intact and retrievable by the approaches adopted from the cryptographic and distributed-systems communities.

DEPSKY [6] improves the availability and confidentiality of commercial storage cloud service workload characteristics and the diversity of cloud storage providers, specially the file sizes, into the design of the redundant data distribution strategy so that the advantages of both the replication and erasure codes are exploited while hiding their disadvantages. As a result, both performance and storage efficiency are improved with the availability guarantee. The scope of most current research has been limited in a single cloud. The seamless integration of manufacturing resources, data and capabilities on different clouds is still a research challenge [9]. Similar demands can be found in the areas of smart factory, smart home and smart city, which are all in need of integrating services from different industrial clouds [10]. Thus we need to explore the area for integrating multiple clouds.

III. EXISTING SYSTEM

System Analysis is a detailed study of the various operations performed by a system and their relationships within and outside of the system. Here the key question is- what all problems exist in the present system what must be done to solve the problem. Analysis begins when a user or manager begins a study of the program using existing system. In our existing system there is a no sufficient storage space available for users so there is need for different task to perform on different clouds. Existing system does not provides different services for different cloud at a time in single app so this is a time consuming for users to access different clouds. So there is need to implement such an application in which we can integrate multiple clouds at one place. So existing systems does not support for these features and there is no such existing system which fulfils such requirement.

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IV. PROPOSED SYSTEM

Android is a powerful operating system which was mainly introduced in order to satisfy the market needs. It is an Open Source which runs on the Linux kernel mainly designed for the Smart Phones and the Tablets. Every Android Operating System uses their own Libraries and also the Database embedded in them. To overcome the disadvantages and to fulfill customer requirements we are going to propose a system where we are integrating multiple clouds in single android application. This android application will provide different services for users. User will interact with multiple clouds by using application programming interface and can perform different tasks, for example read, write etc. So this will reduce time as well as storage space also and we ensure this android application will be very useful for users.

V. ARCHITECTURAL DESIGN

We are designing this application in order to overcome existing single cloud uses. We are also providing many features with different GUI. The design of application is as explained further. This application module provides various features to store the files such as read, write and display of data files.

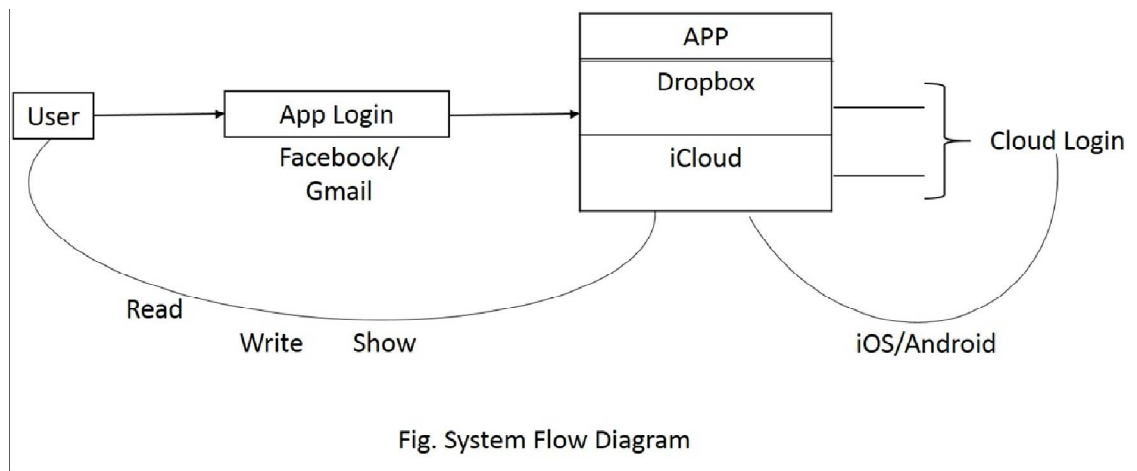


Fig. System Flow Diagram

By hitting the application icon he will be asked to Gmail or Facebook authentication and then particular app login. Authentication with Gmail like accounts ensures the security because these are the trusted sites. It provides an advantage that this authentication will be required for the first time login only. After getting authenticated, he will not be asked for authentication login every time when opening the app. The user when installs the application into their android phone, icon of the application will be generated. As the user hits the application icon he will be asked to Gmail or Facebook authentication and then particular app login. As the user logs in his cloud account the GUI is provided there to interact with the different cloud services. Here user can perform several tasks such as reading the contents of their specific cloud account, he can write the data to the cloud, and can view. Whatever operations he does, are done with that particular cloud. After authentication different cloud accounts are provided. These different clouds are having different storage capacity according to their design structure. This storage space can be accessed by the user for the file storage application.

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VI. DETAILED DESIGN

- USE CASE VIEW :

According to use case scenario for OverClouded design, here actor is the User.

1) User –

The user when install the application into their android phone, icon of the application will be generated. As the user hits the application icon he will be asked to Gmail or Facebook authentication and then particular app login. As the user logins in his cloud account the GUI is provided there to interact with the different cloud services. Here user can perform several tasks such as reading the contents of their specific cloud account, he can write the data to the cloud, and can view. Whatever operations he does, are done with that particular cloud.

User will perform various tasks such as,

- a) Login to the application
- b) Login to the clouds separately
- c) Read the data from the cloud directly
- d) Write the data to the cloud
- e) View the data files

2) Dropbox –

Dropbox is an cloud provided for the user which is widely used to store files, keeping folders safe, etc purposes. In the application, whenever user hit on Dropbox tab all his account data will be fetched on the app and user will have access to all his files and folders. All the operations like read, write, display made by the user in the app, will also be made in the Dropbox's cloud directly. So direct cloud interaction is there.

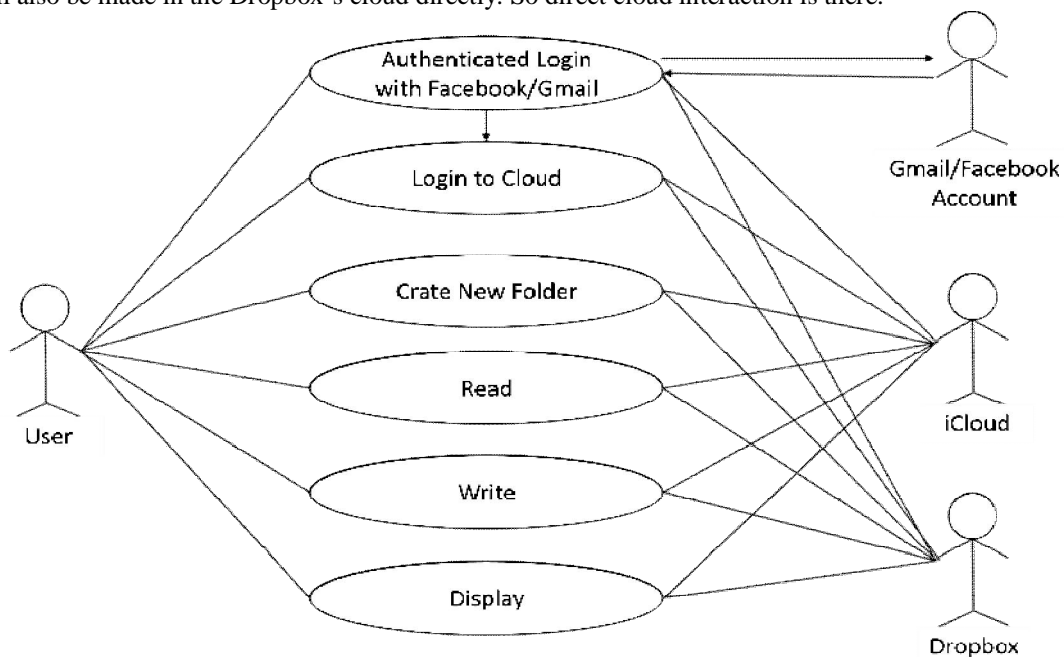


Fig. Use Case Diagram

Fig.2: Use Case Diagram

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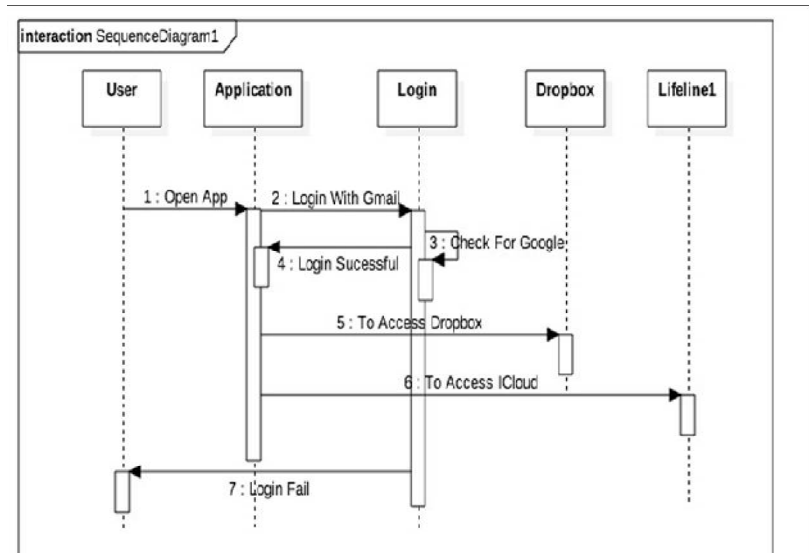
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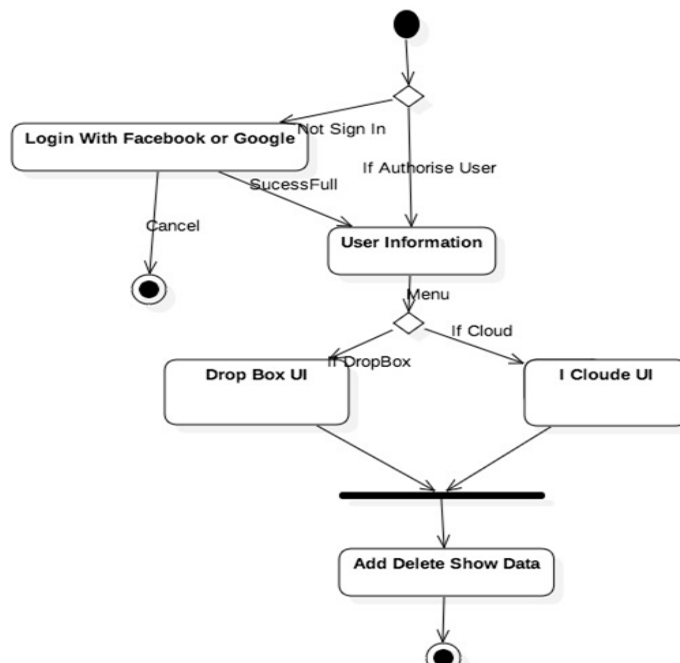
3) iCloud –

iCloud is another cloud provided by the Apple's company which is widely used by the Apple users to store files, keeping folders safe, etc purposes. In the application, whenever user hit on iCloud tab all his cloud account data will be fetched on the app and user will have access to all his files and folders. All the operations made by the user in the app, will also be made in the iCloud's cloud directly. So direct cloud interaction is provided by the application.

- SEQUENCE DIAGRAM :



- ACTIVITY DIAGRAM :



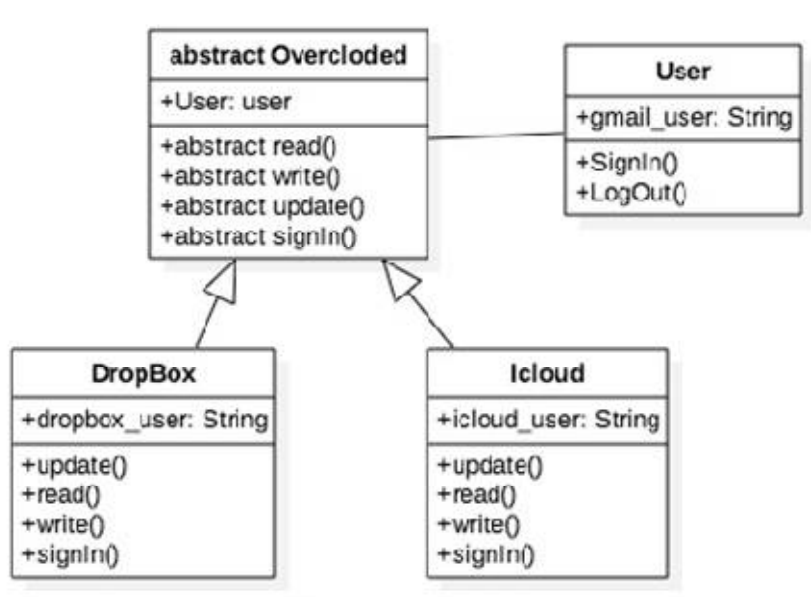
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- CLASS DIAGRAM :



VII. ADVANTAGES OF THE APPLICATION

The proposed OverClouded which is being developed by Curios Android Tech team is an Android application. Being developed to overcome the disadvantages of using multiple cloud storage applications. In this project we are going to integrate multiple clouds in a single application. The user having different cloud account used for data storage purpose can use this app. It will provide different features to the user :

- Authentication login for security
- Reduces Space on the Android Device
- Time required to access multiple clouds is reduced
- No need to install different applications for different accounts
- Multiple clouds are available in a single android application
- It provides multiple operations on the cloud like uploading and downloading the files
- Sharing of data is easy
- Increase storage capacity

VIII. CONCLUSION AND FUTURE WORK

The area of most current research has been limited in a single cloud. The seamless integration of manufacturing resources, data and capabilities on different clouds is still a research challenge. Similar demands can be found in the areas of smart factory, smart home and smart city, which are all in need of integrating services from different industrial clouds. Thus we need to explore the area for integrating multiple clouds. So we are designing the application to integrate multiple cloud providers access in a single tap to consider the specific features of the integrating cloud storage services, thus we will try to improve the flexibility of cloud and the efficiency of cloud storage services.



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