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# A Futuristic Approach: Mobile Cloud Operating System

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***Abstract— we are observing recent change in trend in usage of mobile phones. Smartphone users are increasing drastically now a day, in coming 5-6 years everyone in this world will use smartphone instead of simple specification phone. Hardware specification is almost same for every mobile phone company. As we all know computers and laptops are platform independent, where you can install any operating system. Company's provide different operating system like android, apple ios, blackberry 0S, Symbian, windows etc. for mobile phones. Problem area for users is that they cannot install an operating system in their mobiles for e.g. Apple mobile user cannot install android OS and vice versa. Mobile phone should be platform independent. I introduce a method called Mobile Cloud Operating System. In MCOS we will have standalone mobile phone without any operating system installed where we can install operating system as per our need. By doing this we will connect this mobile phone with cloud server, after connecting mobile with cloud server we can install any operating system whenever we want in our mobile. MCOS is a centralized cloud server which has all the operating systems like Symbian, blackberry, apple, android, windows etc. Depending on user's need they can install operating system in their mobile phone. As MCOS is portable, if we want to change our mobile phone's OS we can do that any time and if we want to change our mobile phone but don't want to change our OS we can do that too.***

***Keywords— Mobile Cloud Operating System (MCOS), Distributed Cloud Operating System, Garbage mobile phone, Cloud Operating System***

## I. INTRODUCTION

Cloud computing is a technology which delivers services for the Internet. Latest trend comes in IT: a way to add capabilities or increase capacity without investing any infrastructure or licensing software. These services are divided into three categories: Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS) and Software-as-a-Service (SaaS). A cloud service has distinct from traditional hosting. Demand is sold depend upon usages. It is elastic means you can have as much or as little services whenever you required; all services is managed by the service providers(the only thing consumer required is computer and Internet access).

Focusing on all Cloud services, as computing industry is changing day by day and so are its operations. Why to spend lots of money in buying hardware. Technology is increasing day by day, in old times we had limited resources and hardware was costly to buy, but as technology increased everything has become cheap, people depend upon computer processor speed, memory storage devices and RAM memory so that their computer works fast in terms of speed. As we also know internet is growing day by day its speed changes drastically. In coming 5-10 years internet speed will be very high as compared to nowadays. There is a technology called Cloud OS which is totally dependent upon internet, and millions of people are using internet so Cloud technology is very popular.

I have seen many researchers who contributed in distributed Cloud operating system, so it struck my mind that this technology be introduced in mobile more people use mobile phones rather than laptops and computers. Mobile phone is far more convenient than other devices; its popularity will further increase in coming years. I have introduced all the problems that all users are facing nowadays with their mobile phones i.e. all the drawbacks of smartphones and how the companies make profit. The solution to these problems is MCOS which will change the behaviour of mobile phone around the world. I also introduced security features on how to secure data and how much Cloud is secure with respect to the mobile devices. I also introduced the term platform independent in MCOS which will again increase the features of Cloud computing. As now users don't have to depend upon company's configured mobiles, and they can change the configuration according to their needs.

## II. BACKGROUND

Our work is drawn from different fields of related work and many researchers are still doing research in fields like distributed Cloud OS, remote management, Cloud security, virtualization. These are the related fields that I have studied so far and it gives clear idea for the methodology so I introduced this technology in brief for my work.

A. Distributed cloud OS: A distributed operating system is a central program running on all computers which are connected by a network. This program unites the different computers into a single computing and storage resources. Distributed operating system is classified as, real time, or embedded. The need for distributed operating system is for changes in the hardware environment in organizations. Prices have fallen rapidly in the last few decades, resulting

 

increase of workstation, personal computers, servers, and networks. This rapid increase we need for transparent and efficient management for these distributed resources. Cloud is a distributed operating system which combines set of nodes into a conceptually centralized system. System composed of compute servers, data servers, and workstation

B. Virtualization**:** Refers to the creation of a virtual environment in all terms like server, desktop, operating system, mobile phones, file storage and network. Benefit offers by virtualization is: deployment low or no-cost, resource utilization, cost savings and power savings operations. Main goal of virtualization is to manage workloads by transforming traditional computing for making best use. Today virtualization can be applied to a wide range of system, including operating system virtualization, hardware virtualization and server virtualization. Virtual machine is just like a normal data file which can be moved and copied to another computer. Computer in virtual environment uses two file structures: One define the hardware and other in hard drive. One of the virtualization software, hypervisor has caching technology that can do changes in virtual hardware, or the virtual hard disk. This technology gives rights to user for discard any change done to operating system.

## III. PROBLEM STATEMENT

Presently smartphones have lots of problems. In view of the same which users are facing, I am describing some of them as follows.

A. Limited memory: Because of the limited memory in smartphones, we cannot store much data as required in our devices. We have limited memory available in RAM and ROM. Nowadays maximum memory available is 128GB but, one may have much more data to store in the device. At present users are using smartphones more frequently rather than laptops and computer. It is really convenient to store data in mobile phones. So we should have unlimited memory space for users to store their data.

B. Data loss: One of the most important problems we are facing is of data loss. One may lose important data sometimes accidently and there is no backup for recovering this lost data. How to recover and from where to recover is a problem that every user has to face sometimes.

C. Slow processor: As we have limited processor speed due to small size of mobile devices sometimes the device hangs. Sometimes the device heats up which is due to the processor working all the time. Some applications are heavily loaded which limits the processor speed, and the problem of hanging occurs. This all happens because we all are dependent upon processor speed.

D. Cost: Cost is always increasing as the real cost is of the hardware used. The cost of the smartphone is increasing as the mobile companies update the hardware specification of their devices in terms of memory, processor, camera, OS, application and so on. Not all the smartphone users can buy such costly smartphones as the increased cost is due to the increase in memory, high configuration mobile phones and latest Operating System.

E. Platform dependent: All smartphones are platform dependent in terms of mobile OS, like Samsung mobile phone cannot use or install apple ios into their mobile. This platform dependency is again a major problem as one has to depend upon what the company provides. All users are facing this kind of serious problem and if one wants to use apple ios into their mobile then they have to buy an apple smartphone. Apple ios is easy to use but due to high cost everyone can't afford to buy an apple smartphone.

F. Pre-configured OS: All smartphone are already configured with their OS and they use a lot of memory space which can't be deleted. Why to use pre-configured OS, when it can be configured by us according to our needs. When one buys a smartphone the person has to use the OS pre-installed in the device. We cannot change the OS, as it is permanently loaded into our handsets. Some people like mobile in terms of camera and design, but they don't like the pre-installed OS which creates a lot of problem.

G. Pre-configured Application: Smartphone are not only pre-configured OS but they also have pre-configured Applications which can't be deleted too. Some applications are not used by all the users and they are stored in the permanent memory which cannot be deleted.

H. Security: Security is again a major problem with the smartphones. Every users think's that we have a mobile phone in our hand so it is secure but in reality they don't know the real background of security. Security with physical protection is not the real security nor is security with providing password in their handset the security. The users are unaware of mobile security and in coming years it may become a major threat. Everyone is using smartphones and security in smartphone is the real issues. People are only aware of security with respects to laptops and computers.

Loss of Device: What will happen if our mobile phone is lost or stolen? This is another serious problem because our data is stored in our mobile phones, and if we lose our phone we lose everything what is inside in our phone. If our mobile phone breaks or sometimes it is not working, we still can recover our data but what will happen if there is no source of recovering. Users can buy a new smartphone but they can't buy important data, contacts and all which was inside the phone.

## IV. RESEARCH METHODOLOGY

MCOS is an approach to solve the problem of platform independency for mobile OS. We have to see what are the changes required in mobile phone and Cloud server to apply MCOS. Keeping in mind of security issues, whole working is divided in two parts:

A. Mobile phone configuration: In this we have to configure the mobile phone so that it can support Cloud sever. Several changes need to be done with mobile phones. The changes to do with mobile phones are as follows:

 

1) Common Network software installation: The change that needs to be done in mobile phone is that they should have pre-installed network software to connect to Cloud server. This software is only for using internet in mobile phone.
2) Network connection with SIM or Wi-Fi: We needs to have a SIM of a company who provides internet so that we can use internet in our mobile phones or we can connect internet through Wi-Fi also.

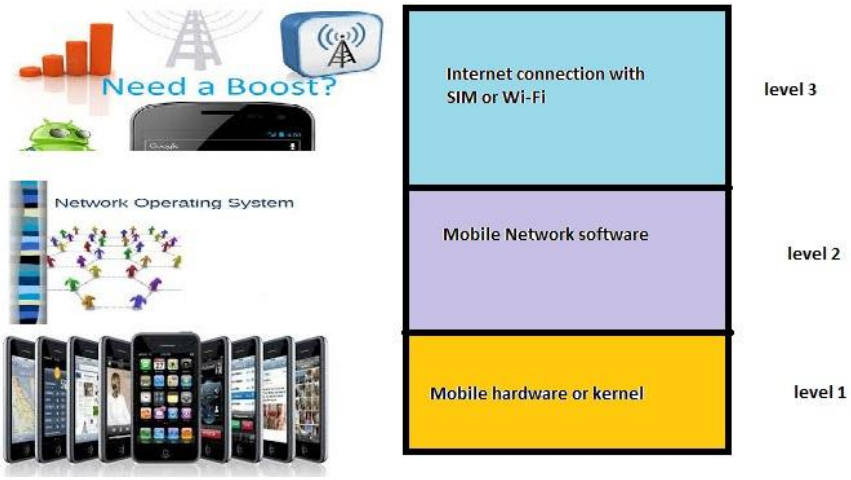


Fig. 1 Mobile Phone Architecture

3) High Speed Internet Connection: The internet connection should be of very high speed as we are directly connecting with Cloud all the time. Internet plays a major role in MCOS.

B. Mobile Cloud Operating System (MCOS) configuration: We have to configure MCOS with respect to mobile phones. A proper virtualized environment should be there so that user can't distinguish between the original OS and Cloud OS. According to user's need and specification they can use OS in MCOS:

1) Register with Cloud for naive user: All naive users who buy a new handset should register one time with their respective Cloud. After that Cloud OS will provide them a proper authentication id.
2) Authorization: All authorized users before login has to be passing through security which is biometric fingerprint authentication. After passing this security they can login to their ID page.
3) Selecting hardware specification: All naive users should select hardware specification as per their need.
4) Naive user selecting mobile OS: All naive users have to select OS which they want to install in their Cloud. After selecting OS they need to select the applications they want to install in their respective OS.
5) Payment: After selecting all the specifications, OS and applications user need to do one-time payment for their Cloud space. After doing the payment user can install their OS and applications in their Cloud space.
6) Direct dedicated connection all time: Cloud server should provide you direct dedicated line all the time. As your OS is installed and saved in Cloud so whatever you download or upload is always with Cloud.

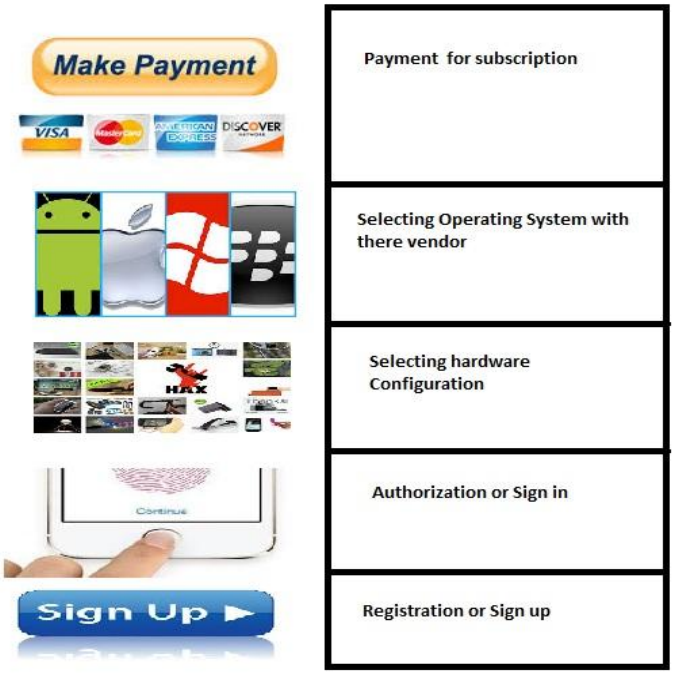


Fig. 2 MCOS Architecture

 

Working:

**S**tep 1: switch on the mobile phone with pre-loaded network application software and biometric application.

Step 2: connect internet with Wi-Fi or any other internet resources.

Step 3: connect with MCOS Cloud server and you will see a login page there.

Step 4: Naïve user register with Cloud. And old user Sign in with Cloud with biometric authentication.

Step 5: Naïve user has to install and pay the money to MCOS provider for OS they want to use. Old users select their mobile OS and use it.

Step 6: Dedicated connection is there between Cloud mobile OS and user with their handset all time, for this internet network should always be high.

Only the authenticated person of their own mobile phone can give permission to other to use their own mobile phone. For which they have to permanent sign out from the cloud then only other person can connect their respective OS into their mobile handset, this will give you a great security feature with platform independency.

## V. OBJECTIVE

We have all resources available these days but don't know their efficient usage. MCOS approach helps us to resolve the problem stated earlier. Some of the solutions are as follows:

A. Unlimited Memory: Cloud provide user unlimited memory which will always be available. Neither will user have any memory shortage nor have they to upgrade their mobile phones because of memory issue. Cloud is a server which has unlimited storage and very high speed.

B. No data loss: User will ever face any problem related to data loss. Data storage in Cloud is in multiple disks so whenever user needs data they can easily recover that from Cloud. Cloud has proper backup for data.

C. Highly configured server: Cloud is highly configured server so its speed is much faster as compared to mobile phones. Cloud has multiple cores because of which speed of server is always very high. User connected to Cloud server will always have high speed on their mobile phones.

D. Low cost: To buy a space in Cloud server is very cheap as compared to other hardware of mobiles. Since this is a highly configured server so space available in this server is also very high which makes it cheap and easily accessible to the users. If we compare space used in a mobile phone hard drive with the space used in Cloud server memory, we will find that memory used in Cloud Server is low in cost as compared to mobile phone. Software for all mobile phones is same; their cost is because of hardware used. So instead of buying costly mobile sets we can use Cloud server where all hardware are available with much faster speed and low cost.

E. Platform independent: Cloud makes our mobile phone platform independent. User using Cloud server doesn't have to use pre-configured OS and their respective applications. Being multiple OS available in Cloud server, we can install and use any OS as per our requirement. Present mobile phones are having pre-configured OS and applications stored in their permanent memory which occupy lot of space and cannot be deleted. MCOS user does not have any OS or any application in their mobile phones everything is stored in their Cloud space, so they have ample free space available and does not have any kind of reversed space. Thus MCOS provide greater flexibility for their users.

F. Security for USER: MCOS provide users biometric authentication to connect with Cloud. Biometric authentication is one of the best securities available till date. Security in mobile phones is very less as compared to server security. Cloud sever provide greater security and authentication for their entire user, so users are ensured that their mobile phones are secure.

G. Security in terms of Terrorism: MCOS reserves data in simple and arranged manner. To get information from present mobile phones is very complex. If each mobile phone is connected to MCOS then data retention will be very easy. If each company connects their mobile phones to Cloud server then no terrorist can use their mobile phone for crime. Government will have full information of all users as data of all mobile phones are available in Cloud server.

H. Garbage mobile phone: MCOS user don't have to worry if their mobile phone is loss or stolen. Firstly, all their data is saved in Cloud, they can buy a new mobile phone and connect to their old OS. Secondly no one can use your mobile phone without your biometric authentication. Only you are the authorized person who can give permission for other user to connect to their Cloud from your mobile phone. So a lost or stolen mobile is just garbage or a piece of hardware for other person.

## VI. CONCLUSION

MCOS is a very powerful approach which changes the usage of mobile phones. Only thing required is mobile device, high speed internet connection, rest everything is done by MCOS. We don't have to depend upon OS, only we need is mobile phone. Users don't have to pay unnecessary money for extra speed processor, memory, etc. as all this facility is provided by the MCOS server by paying one time. Security is also high in this approach as server is very much secure as compared to mobile devices. Biometric authentication is used in MCOS which is best and most secure authentication throughout the world. User don't have to worry about loss of data when they lose their mobile phone as all their data is present in Cloud server which is easily accessible from any mobile set, only thing required is their login detail and authentication.

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