A Review on mobile cloud computing and its challanges

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ABSTRACT

Today is the epoch of cloud computing technology. Cloud computing is the on-demand availability of computer system resources,especially data storage and computing power,without direct active management by the user .the rapid development of mobile technology and wireless networking leads to strong demand for mobile cloud computing.Mobile cloud computing (MCC) is an infrastructure where both the data storage and data processing happen outside of the mobile device. It's purpose is to overcome the obstacles of mobile computing which were related to storage,battery life,bandwidth and security.In these paper first we present the review of MCC in terms of architecture,deployment models and applications of MCC and after that we highlight the issues and challanges related to MCC.

Keywords: Mobile cloud computing,Cloud computing,cloud challenges,cloud security,cloud privacy.

I. INTRODUCTION

Mobile cloud computing (MCC) is an infrastructure where both the data storage and data processing happen outside of the mobile device. Mobile cloud applications move the computing power and data storage away from the mobile devices into powerful and centralized computing platforms which are located in clouds, which are then accessed over the wireless connection based on a thin native client.Mobile devices face many resource challenges (battery life, storage, size etc).

It is necessary to have a secured and balanced access over the information to remain a business effective, competitive and profitable. Cloud computing provides a solution to minimize the cost of accessing resources and maximize the resource utilization. New software tools are available from remote locations so deploying a costly resource is not needed . Many security issues are there as different technologies including networks, databases, operating systems, virtualization, resource scheduling, transaction management, load balancing, concurrency control and memory management are used in cloud computing. Some

of the security issues include data isolation, browser security, malware, flooding attack, privacy, data integrity, and protection of data .Recent years have seen the trend of incorporating cloud computing support to mobile applications.Siri, Instagram, Snapchat and Google Now are just a subset of products on mobile platforms that benefit from cloud computing and enrich Compared with the cloud, both computing capability and storage capacity of PMDs are extremely limited because their major design goal is energy efficiency. PMDs will be greatly enhanced if we equip them with cloud computing support. Expanded storage capacity and augmented computing capability are only part of the advantages we gain; PMDs may also save energy via offloading computation to the cloud .

With the rapid evolution of both PMDs and cloud computing technologies , we can see a trend of mobile cloud computing in the near future. So it is very important to provide solutions to the development of mobile cloud applications (MCAs), which can incorporate cloud computing and storage services efficiently into normal mobile

applications, especially for developers targeting multiple mobile platforms, such as the most popular iOS, Android and Windows Phone platforms.

Developing MCAs is hard because it is difficult to identify the computation-intensive tasks that can be offloaded to execute in the cloud. For example, most device-dependent tasks related to user interactions and display can only be executed on the devices. Moreover, developing MCAs requires the knowledge of many low-level details such as data serial ization, network communication and cloud computing service invocation, which becomes even harder when providing cross platform support for MCAs.

II. ARCHITECTURE OF MOBILE CLOUD COMPUTING

Generally architecture of MCC consist of components which are mobile users,mobile operators,Internet service provider(ISP)and cloud service providers. Here the mobile devices are connected to mobile networks via base stations which establish and control the connections and In Mobile Cloud Computing (MCC) architecture Mobile devices are connected to the functional interfaces between the networks and mobile devices. Mobile users' requests and information are transmitted to the central processors that are connected to servers providing mobile network services. The subscribers' requests are delivered to a cloud through the Internet. In the cloud, cloud controllers process the requests to provide mobile users with the corresponding cloud services.this architecture provides effectiveness,using the advantages of cloud computing.The four deployment models for cloud architecture which are identified are private cloud,public cloud,hybrid cloud,community cloud. The MCC models are:
 Mobile Network-as-a-Service(MNaaS),
Mobile Cloud-as-a-Service(MCaaS),
MobileData-as-a-Service(MDaaS),
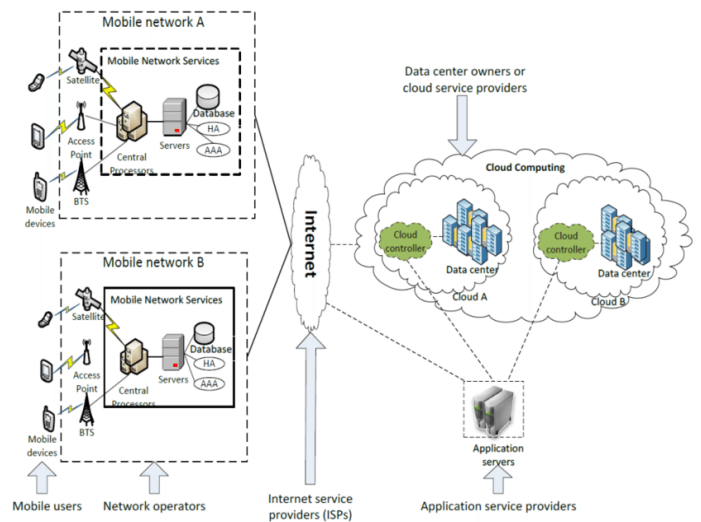Mobile Platform-as-a-Service(MPaaS),
Mobile Software-as-a-Service(MSaaS).

Figure 1: Architecutre of MCC

III. CHALLENGES

a) Low Bandwidth:this problem is one of the major issues in mobile cloud environment that need to be tackled.

b) Security and Privacy:it has become the biggest concern.it is harder to manage treats on mobile devices as compared to desktop devices.
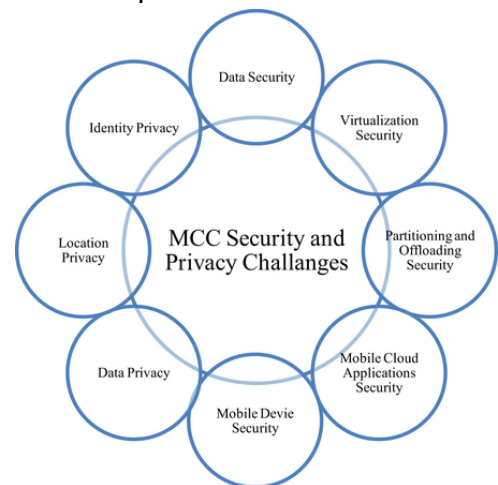

Figure 2: MCC Security and privacy challanges

c) Service availability:connection is another major treat in cloud computing.

d) Alteration of networks:MCC is used in different operating systems driven patform like android,Apple ios and windows phone.so it has to be compatible with different platforms thus here IRNA (Intelligent Radio Network Access) technique is used for managed

it.

e) Limited energy source:MCC increases battery useage of mobile devices which become an major issue.

IV. APPLICATIONS OF MOBILE CLOUD COMPUTING

Now a days,wide range of applications of cloud computing are used for cloud storage,learning and education,cloud mobile media,mobile gaming,mobile social networks,cloud-assisted internet of things by mobile users.this applications are developed for getting mobile device capability and mobile user demands.in this section,some MCC applications are as follows:

a) Financial services which includes mobile banking and brokeage service.
b) Mobile commerce: It is a business model for commerce using mobile devices.it fulfil some tasks that require mobility for e.g. mobile messaging,mobile transactions and payments and mobile ticketing.
c) Service/retail: It provides the ability to the consumer for placing the order as well as pay for order through mobile device.
d) Telecommunication: It plays important role for message transfer,service requirements,voice data transfer,bill payment as well as account review via mobile telecommunications.
e) Information service: It consist of the delivery of financial news,traffic updates and sports figures with a single mobile device.
f) Mobile gaming: games provide by MCC support multiplayers.PUBG is most popular example of it.
g) Otherapplications:M-Learning,Healthcare,Social Networking.

V. Advantages :

MCC is the combination of cloud and mobile computing it inherits the advantages of cloud for mobile services.

Dynamic provisioning

The dynamic provisioning of resources is a flexible way for service provider and mobile users to run their applications without an advanced reservation of resources. Without storing data and mobile devices, it is stored in the cloud and it can be accessed dynamically.

Multitenancy

Multitenancy is the internet service providers i.e network operator and data centre owner can share the resources and cost to provide a verity of application for a large number of users.

Scalability

Scalability is the deployment of mobile applications can be performed and scaled to meet the unpredictable user demands due to flexible resources provisioning. Service provider of scalability can easily add and expand an application and service without or with a little constraint on resource usage.

Ease of integration

It can be integrated easily through the cloud and internet to meet user demand.

VI. Disadvantages

Data security

Data security is one of the major concerns of cloud computing. Most of the time mobile users provide sensitive information through the network, and if it is not protected can cause major damages. You need to choose the most reliable service provider, who can keep your data totally safe and secure.

Connectivity and Performance Issues

As mobile cloud computing depends on internet, this can affect your access and use. Sometimes you may feel that performance is not up to mark. Hence, it is better to check the track record of your service provider before undertaking the service. In spite of keeping up high standards of maintenance, cloud service providers may face some serious dysfunction.

VII.CONCLUSION

Mobile cloud computing is a rising as well as

explode field of cloud computing. To use services whether software, storage or applications on the cloud by mobile devices is the aim of this technology. so it is on the early stage of development, could become the great replica for mobile application in future mobile cloud computing. This paper consist of an overview of mobile cloud computing and it also have been presented its definitions, architecture, challanges and service models advantages   for MCC . However, although this research field is still undiscovered in many challanges,depth.therefore finally, some areas such as Mobile devices, application partitioning, offloading, service transformation,data in tegrety, security and privacy represent open issues which recognize future research handling in this field.

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