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A Review on Cloud Based Mobile Computing

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ABSTRACT: Mobile cloud computing (MCC) holds a new dawn of computing, where the cloud users are attracted to multiple services through the Internet. MCC has a qualitative, flexible, and cost-effective delivery platform for providing services to mobile cloud users with the aid of the Internet. MCC can be defined as “a rich mobile computing technology that leverages unified elastic resources of varied clouds and network technologies toward unrestricted functionality, storage, and mobility to serve a multitude of mobile devices anywhere, anytime through the channel of Ethernet or internet regardless of heterogeneous environments and platforms based on the pay-as-you-use principle.

Objectives: Mobile cloud computing takes the pressure off mobile devices by harnessing the power of cloud infrastructure. Developers build and update rich mobile apps using cloud services and then deploy them for remote access from any device. Cloud computing makes data backup, disaster recovery, and business continuity easier and less expensive because data can be mirrored at multiple redundant sites on the cloud provider's network.

I. INTRODUCTION

Mobile Cloud Computing is defined as a combination of mobile computing, cloud computing, and wireless network that come up together purpose such as rich computational resources to mobile users, network operators, as well as to cloud computing providers. Mobile Cloud Computing is meant to make it possible for rich mobile applications to be executed on a different number of mobile devices. In this technology, data processing, and data storage happen outside of mobile devices. Mobile cloud computing (MCC) is the method of using cloud technology to deliver mobile apps. Complex mobile apps today perform tasks such as authentication, location-aware functions, and providing targeted content and communication for end users. Hence, they require extensive computational resources such as data storage capacity, memory, and processing power. Mobile cloud computing takes the pressure off mobile devices by harnessing the power of cloud infrastructure. Developers build and update rich mobile apps using cloud services and then deploy them for remote access from any device. These cloud-based mobile apps use cloud technology to store and process data so that the app is usable on all types of old and new mobile devices.

In a remote data center, Mobile Cloud Applications are operated generally by a third-party, data is stored, and compute cycles are carried out. The uptime, integration, and security aspects are taken care of, by a backend, which also enables support to a multitude of access methods. These apps can function online quite well, however, they need timely updating.

Moreover, it offers the same experience as that of a desktop application, while offering the portability of a web application.

The data you save on the cloud is safer than the data you store on your computer's hard drive.

Here are some reasons why mobile cloud computing is safer:

- Servers are typically located in warehouses in locations that people do not have access to.
- Files stored on cloud servers are encrypted, making it difficult for cybercriminals to access them.
- Cloud service providers update security measures regularly.
- Artificial algorithms seek out and identify possible vulnerabilities in security.
- Hardware or software-based firewalls block suspicious traffic.
- The files are backed up on many different servers.

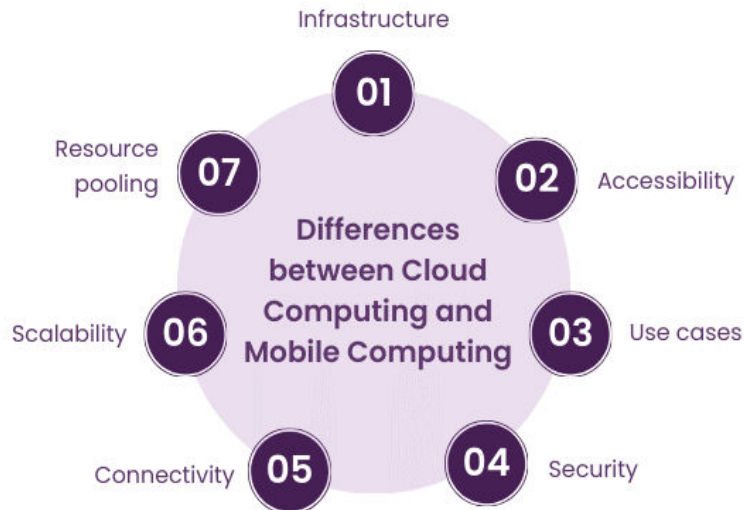
II. DIFFERENCE BETWEEN CLOUD COMPUTING AND MOBILE COMPUTING

Mobile computing and cloud computing seem, at first glance, to be much the same thing. The technologies are similar because they share some common characteristics, but they are different when you take a closer look at them.

Cloud computing delivers computer service over the internet. It’s a scalable, cost-effective service that offers customers everything an in-house computer room can give, such as software, analytics, data storage, and databases. So when you see offerings like IaaS, SaaS, or PaaS, you’re dealing with cloud computing.

Cloud computing isn’t even necessarily mobile computing. For instance, you could be using a desktop system and enjoying a Photoshop subscription (SaaS), and that computer’s staying put. No mobile element there.

On the other hand, mobile computing is a process that allows you to access information and data regardless of your location, provided, of course, you have access to a mobile network! Mobile computing sends data, video, and voice files over a network, using a mobile device like a smartphone, laptop, or tablet.



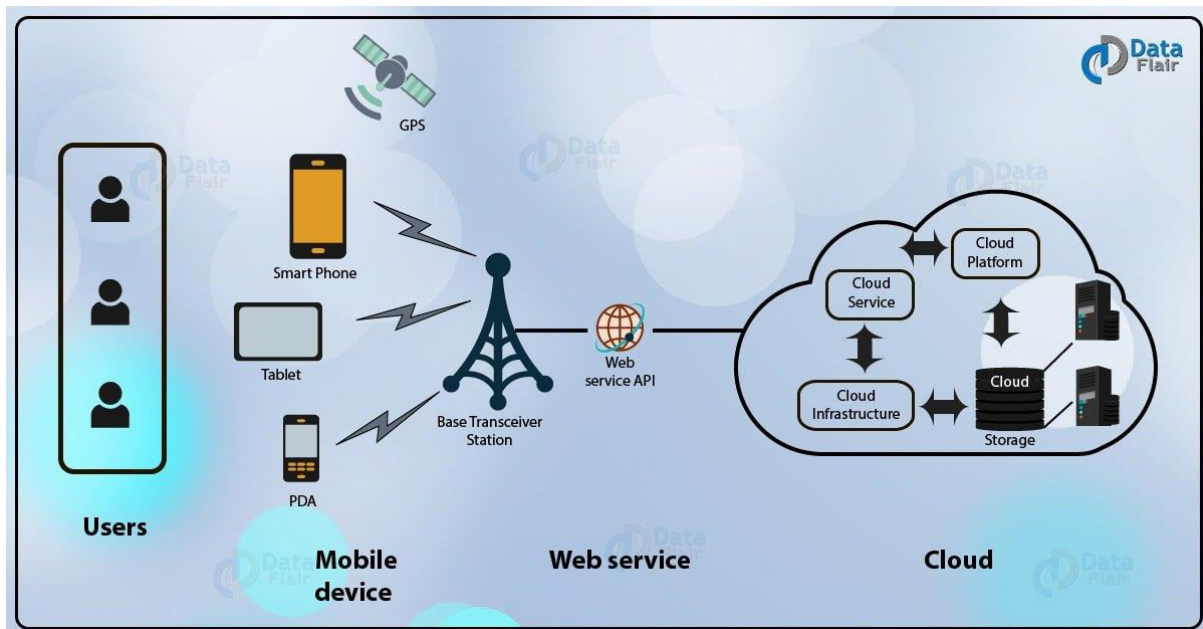
Cloud Computing	Mobile Cloud Computing
<ul style="list-style-type: none"> ✓ Resource pooling ✓ Measured service or billing ✓ Broad network access ✓ Rapid elasticity ✓ On-demand self-service 	<ul style="list-style-type: none"> ✓ Extending battery lifetime: ✓ Improving data storage capacity and processing power: ✓ Improving reliability: ✓ Dynamic provisioning: ✓ Scalability ✓ Multitenancy ✓ Ease of integration

III. NEED MOBILE CLOUD COMPUTING

Due to the built-in web browser used to run the program, mobile cloud computing architecture enables faster application execution. Applications can function without desktop or server-based programs. It is easy to operate and applies several one-handed devices concurrently.

An application can be easily created with the least effort using mobile cloud computing architecture. It is more resource-efficient when compared to traditional PCs and server-based software applications. As a result, mobile cloud computing becomes a more cost-effective choice by assisting in reducing capital expenses

Mobile cloud computing architecture is superior to traditional applications since it can offer higher uptime. It is useless to spend money on computers or servers that operate swiftly but have a limited lifespan and must be shut off after a set amount of time. Mobile cloud computing uses virtualized technology, making it possible to use whenever and wherever necessary and boosting reliability. The accessibility of mobile cloud applications is greater than that of conventional software.



IV. TYPES OF MOBILE CLOUD COMPUTING

The three basic categories are private, public, or hybrid cloud deployment models. Depending on your unique needs, you can choose the model you want.

Private Cloud

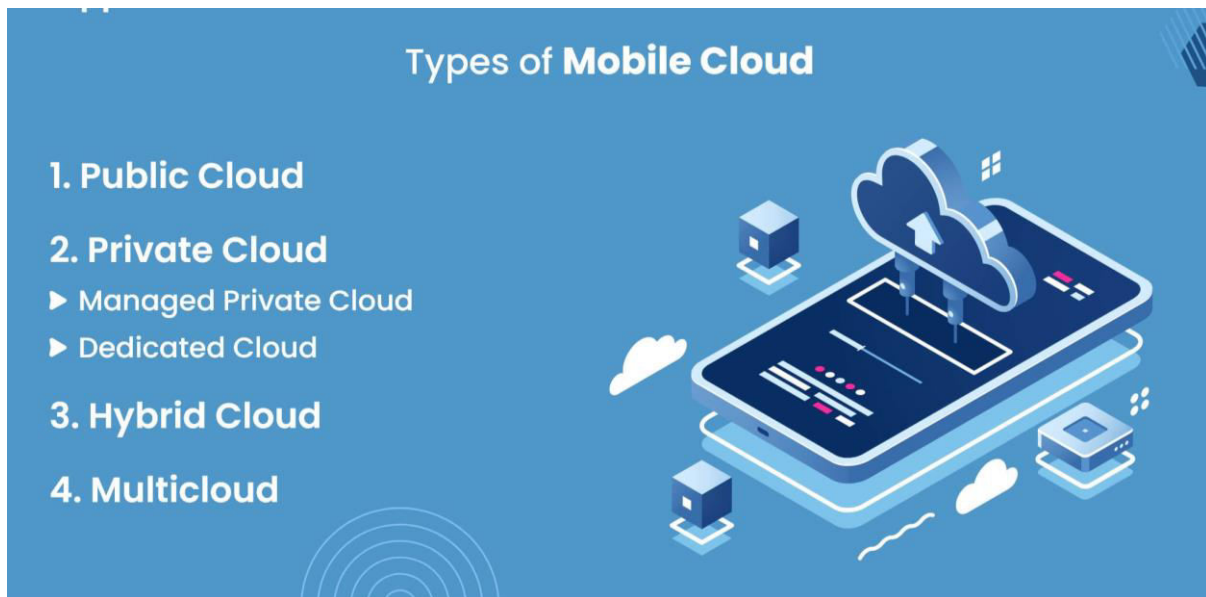
The infrastructure in this arrangement is owned by just one company. This model may be hosted internally or externally. With a focus on security, customization, and processing capacity, the private cloud model is advantageous for large enterprises even though it is pricey.

Public Cloud

All organizations share the infrastructure and services in this approach. The vast space available makes scaling simpler in public cloud solutions. Because public cloud models are pay-per-use, they are an appropriate option for smaller enterprises trying to cut costs.

Hybrid Cloud

A hybrid cloud, which mixes both public and private clouds, combines the two models to produce a customized solution that enables both platforms to communicate without interruption.



V. ARCHITECTURE OF MOBILE CLOUD COMPUTING

Mobile Cloud Computing (MCC) architecture is a paradigm that combines mobile computing and cloud computing to provide a seamless computing experience for mobile device users. MCC offers a number of benefits, including increased processing power, storage capacity, and improved energy efficiency. In this article, we will explore the architecture of Mobile Cloud Computing and its components.

The architecture of Mobile Cloud Computing is designed to provide a seamless computing experience for mobile device users. The mobile devices access the cloud services through the cloudlet layer, which provides computing and storage services in close proximity to the mobile devices. The cloudlet layer, in turn, accesses the cloud layer, which provides advanced computing resources for complex tasks.

The architecture consists of four layers:

- Mobile Device layer
- Cloudlet layer
- Cloud layer
- Network layer

Mobile Device layer:

- This layer includes mobile devices, such as smartphones, tablets, and laptops, which are used by the end-users. These devices can access cloud services through a wireless or cellular network.

Cloudlet layer:

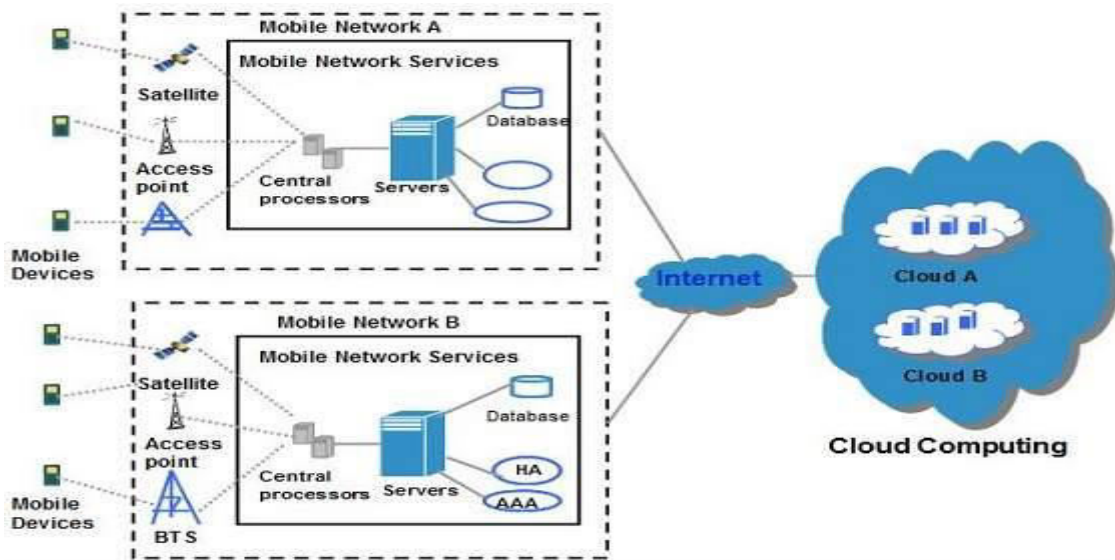
- Cloudlet is a new concept in MCC architecture that is introduced to address the latency issues in cloud computing. A cloudlet is a small data center located at the edge of the network, which is closer to mobile devices.
- Cloudlets provide computing resources to mobile devices, reducing latency and improving the overall performance of cloud services. The cloudlet layer provides computation and storage services to mobile devices.

Cloud layer:

- This layer consists of a large data center that provides computation and storage services to the cloudlets. The cloud layer is responsible for handling complex computing tasks, such as data processing, data analysis, and machine learning. Cloud services are delivered to mobile devices through the cloud layer.

Network layer:

- The network layer is responsible for providing connectivity between mobile devices, cloudlets, and the cloud layer. The network layer includes wireless and cellular networks, as well as wired networks, such as the internet.



VI. FEATURES OF MOBILE CLOUD COMPUTING

Some of the widely known features of Mobile Cloud Computing are:

Accessibility:

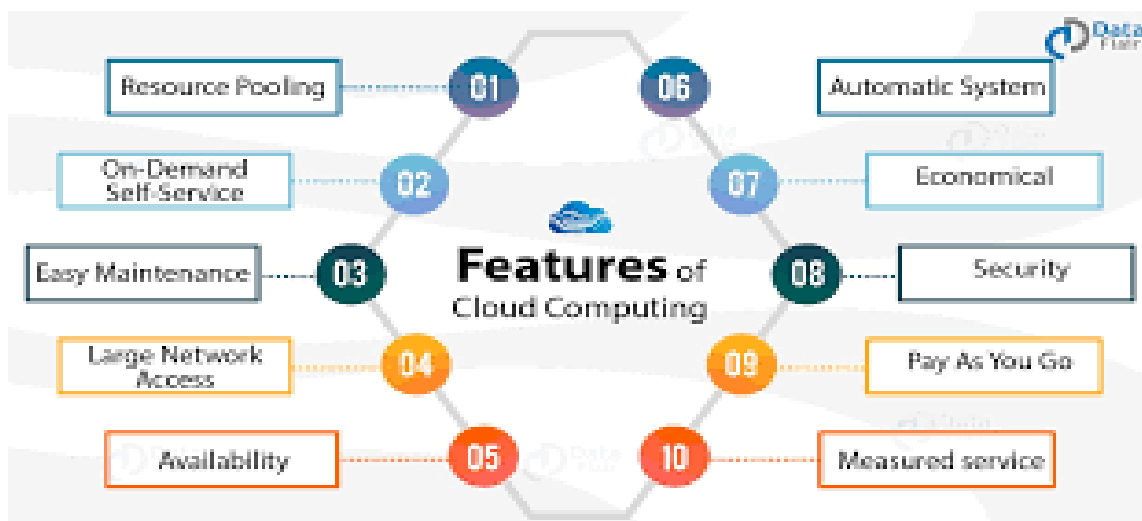
Allows users to access applications, data, and services from anywhere, at any time, using any device with an internet connection. This feature ensures that users are not limited by the storage capacity or processing power of their mobile devices, and can access resources on demand, without having to carry around physical storage devices or worry about compatibility issues.

Cost-effectiveness:

This can be a cost-effective solution for individuals and organizations, as it eliminates the need for expensive hardware and software installations. Instead, users can subscribe to cloud-based services on a pay-per-use basis, without having to invest in costly infrastructure or maintenance.

Collaboration:

Promotes collaboration by allowing multiple users to access and work on the same data and applications simultaneously, regardless of their location. This feature enhances productivity, as it enables teams to work together in real-time, share files and resources, and communicate with each other seamlessly.



Advantages of Mobile Cloud Computing

1. Mobile Cloud Computing saves Business money.
2. Because of the portability which makes their work easy and efficient.
3. Cloud consumers explore more features on their mobile phones.
4. Developers reach greater markets through mobile cloud web services.
5. More network providers can join up in this field.

Mobile Cloud Computing Applications with Examples

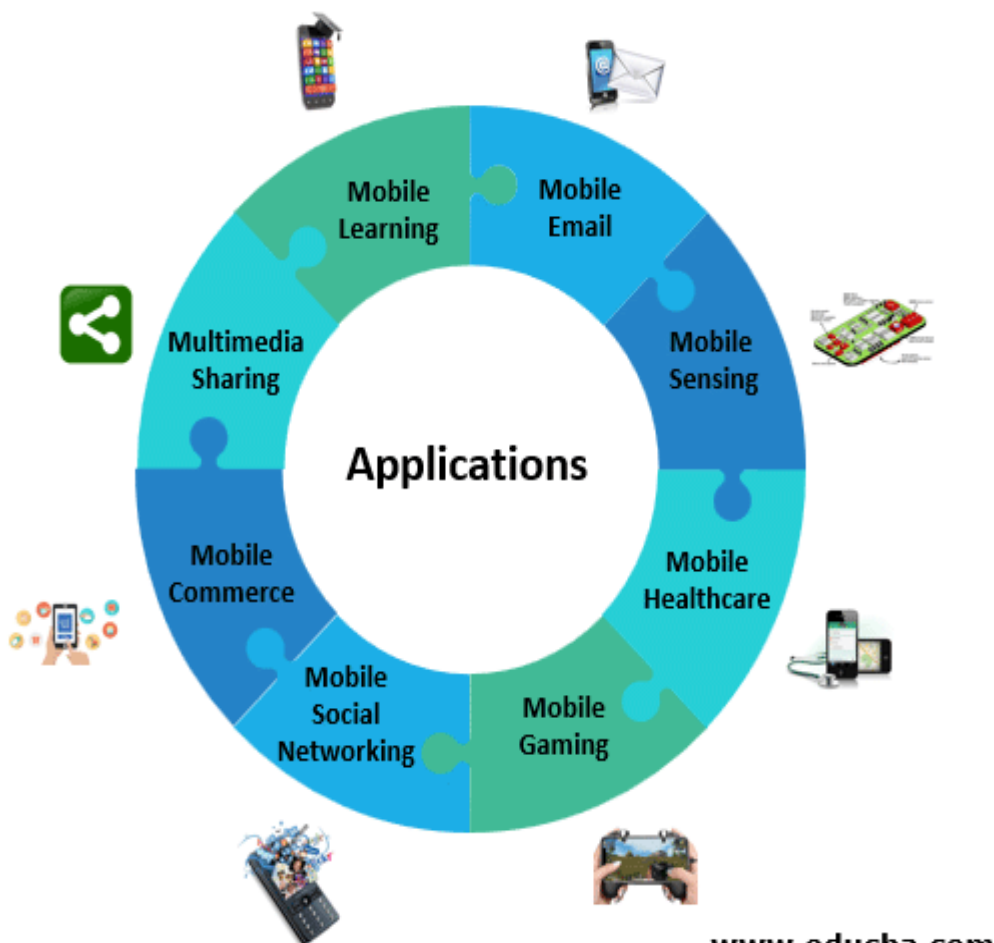
We can use our onboard computer to access a software application known as a mobile cloud program. There are numerous actual instances of cloud systems, including:

Social Media: Real-time data can be quickly shared on social networking sites like Twitter, Instagram, and Facebook. For instance, a mobile user can store and share a video they've taken with another mobile user.

Email: There are various instances of mobile email, including Gmail, Outlook, and Yahoo Mail. You use mobile cloud computing technologies when you check your emails on your smartphone.

Finance and commerce: Using your phone or tablet to check your account balance and placing an order on an e-commerce site like Amazon, Shopify, etc. Its scalability makes it perfect for both commerce and social media.

Healthcare: Using a mobile device to view medical records is easy because of cloud computing. Massive volumes of real-time data can now be stored in the cloud and accessed via a mobile device. Allowing, when necessary, access to patient records facilitates convenience.



VII. CONCLUSION

In conclusion, MCC is an innovative approach to mobile computing that provides users with expanded capabilities and greater flexibility. MCC enables users to take full advantage of the capacity of their smartphones or tablets by combining the processing power of these devices with that available in the cloud. This hybrid approach can provide users with more functionality than they have on their devices alone, as well as additional services not available on either device alone.

MCC relies on cloud computing and mobile devices to create an environment where users can access the functionality of both of their devices without the need for separate servers. Since MCC allows for greater user interaction with each device, this hybrid method can utilize resources from a single client without relying on multiple nodes in the server-client relationship.

VIII. FUTURE SCOPE

Enterprise Business Intelligence (BI) for Mobile Apps will Increase
Enhance the Protection for Mobile Phones
More Emphasis on Mobile User Experience
Development of Better Mobile Wallets
Apple and IBM Partnership to Make Better Enterprise Software
Google Algorithm - Wise Computing
Best Mobile SEO Activities and Strategies Will Become Best Trend

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