Mobile Cloud Computing Security and its Challenges

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ABSTRACT- Mobile cloud computing is a combination of three types of technology. In which the first is mobile computing, the second is cloud computing and the third is wireless technology. Mobile cloud computing has become a very important and advanced computing technology in today's time, But mobile devices are still affected by many kinds of challenges or Issues. There is a problem of storage in this, the problem of security, the problem of privacy remains the problem of connectivity. Mobile cloud computing is being used to overcome these problems, so it is necessary that our mobile cloud computing is very secure because at present work is being done in many areas, such as in the field of education, in the field of business, in the field of health, etc., With the help of mobile devices. Due to which there are many security issues, till through this paper, we have study what is in it. This type of challenges can be seen and can be taken for research in the future.

KEYWORDS- Cloud computing, Cloud computing, challenges, Security, Privacy.

I. INTRODUCTION

Mobile Cloud computing has become a very important communication and storage area in the present time. Cloud computing and the internet are commonly used in mobile cloud computing. It is composed of three types of computational technologies in which mobile computing, cloud computing, and wireless network which improves computing capacity and storage capacity so that the user gets a good experience through

mobile devices[1]. The same cloud computing is used to perform resource based operations with the help of internet which provides us a good range of mobile device for computing, This is a new area of information technology in which we will get to see many benefits in future [2]. Cloud computing integrates a variety of technologies to provide services, platforms and infrastructure to various users and business organizations and Mobile cloud computing further combines cloud computing with mobile device and wireless technologies distributed across the environment to enable seamless connectivity With the rapid development of technology, more and more users upload different types of data to the cloud including sensitive data or Data security and privacy are top concerns when sharing data [3]. The advantage of mobile cloud computing is achieved only when we apply it to cloud computing, it utilizes our mobiles space and its benefits

are passed on to mobile users through mobile devices [4]. Figure 1 describe the components of Mobile Cloud Computing.

In the last few years, there has been a lot of progress in this field, which also works as network of computers and applications. Application Model such as cloud computing have happened in the software services community, due to this, there is a lot of research potential in the cloud computing field. Mobile cloud computing refers to the use of cloud computing due to the reduced storage capacity of mobile devices and stores the data on the cloud through the applications of mobile devices. Access that data through mobile devices, there are many application of mobile cloud computing, there are many facilities to use it, but if the data is being stored somewhere, then there is also a risk of it being stolen, all these things and we do this, will discuss in the paper.
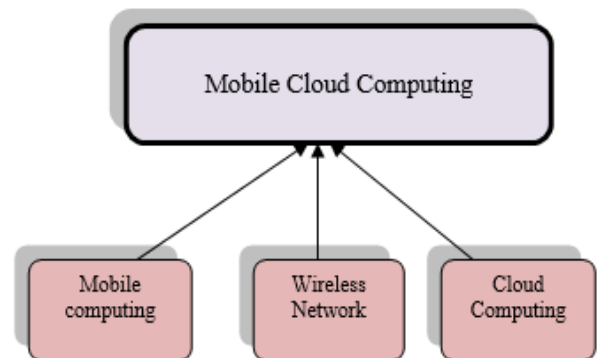

Figure 1: Mobile Cloud Computing

II. LITERATURE REVIEW

Mobile Cloud Computing has become a very important technology in today's time. According to the research conducted by researchers.

According to D. Harith et al. [5] We have also come to know that mobile users do not have access to a lot of data stored or data processing facilities in mobile devices, due to currently storing their data and information for cloud resources, this type of users numbers are increasing day by day.

According to Hussain Multaq Alnajrani et al. [6] every issue regarding security and privacy still remains in mobile cloud computing because we store the data of mobile devices on cloud storage with the help of cloud services. The Security and privacy in the mobile cloud computing is

receiving greater attention these days, yet several existing security and privacy laws and regulations are still needed. According to Eweaya Ibukum et al. [7] The important of security in technology cannot be overstated, it is one of the most pressing challenges, and it has received insufficient study attention and Users today save information in the cloud on the basis of confidence, but when a technology or technical problem comes as a result of a service provider's server failure or entire business failure, mobile cloud computing users are put at danger, and mobile devices are subjected to battery exhaustion attacks

According to SMP Qubeb et al. [8] Specifically addresses the many optimization methods for mobile cloud computing, as well as the various drawbacks that various mobile devices experience, as well as the communication quality. It also offers a way to deal with security-related challenges. And divided this research into two parts first, analyzing the patterns of security attacks that mobile devices adopt. He recommends proper authentication and encryption to keep the data secure. And second is that we should basically focus on the model of our infrastructure which is respecting the security issues.

According to Abdul Hanan Abdullah et al. [9] Mobile Cloud Computing is a very important technology, it is also being used rapidly in different types of fields, but in mobile cloud computing, there are different types of Issues and challenges among users regarding energy efficiency regarding security. It needs to increase its performance. It needs to increase the effciency of its battery, its cloud space and maintaing the confidentiality of the stored data.

According to Pragya Gupta et al. [10] At present, Mobile Cloud Computing is expanding its scope very fast, where earlier mobile devices were used only for voice call and message send or receive, whereas now with the help of smartphones, we can store our data on cloud storage. But in this, Issues is coming about the security and privacy of user's data which needs to be removed.

III. OVERVIEW OF TECHNIQUES

A. Mobile Computing

It has become a very important field today with its development and with the help of wireless technology and internet, mobile devices have become easy to use with the help of cloud computing concept, It is easy and expanded, its utility has increased in any organization, office, home or society. [11] Mobile computing is type of technology that provides us the facility that users can send their transfer data from one device to another devices without any physical link. Transmission in mobile computing occurs without any wireless devices like laptop, Mobile, PCs etc. Devices are connected to a network without any physical link, so we can easily send our messages, videos, text, voice recordings etc. from one devices to another with the help of mobile computing. [12]

B. Cloud Computing

todays technology field has become very flexible with the cloud computing and internet, it provides important source of data in many area like business organization with the help of a third party so that the data can be installed but in this also we have to there is a risk of security and privacy of the data, it is fixed independent online platform on which we remove the data, in this we also increase our data

storage [13]. In General, cloud Computing is a web-based processing in which resort software and information is provided cloud computing through computers and smartphones. It is a new style in which virtualized Service provider are used [14]. Cloud computing provides many types of facilities such as connectivity between users of one or more platforms, the work of commercial data storage, work of data managing etc. We can say that this platform in which users can access data online as per their convenience and desire or may interconnect on different platforms resources through the Internet [15].

C. Mobile Cloud Computing

Mobile cloud computing is made with the help of these types of technology, in which the first is mobile computing, the second is wireless communication or the Internet and the third is cloud computing. Security and privacy is a big issue in cloud computing because cloud storage is used in mobile cloud computing, some mobile devices do not have the facility of internet clouded username and password and some mobile devices these facilities are available. The devices in which these facilities are not available are difficult to find when they are missing, with the help of cloud technology, we can block our mobile device, almost all the social networking sites we used are cloud based and these technology works all these applications we operate through mobile devices and store several hosted through internet this all applications are generally accessed through mobile devices [16]. Figure 2 Describe the architecture of Mobile Cloud Computing.
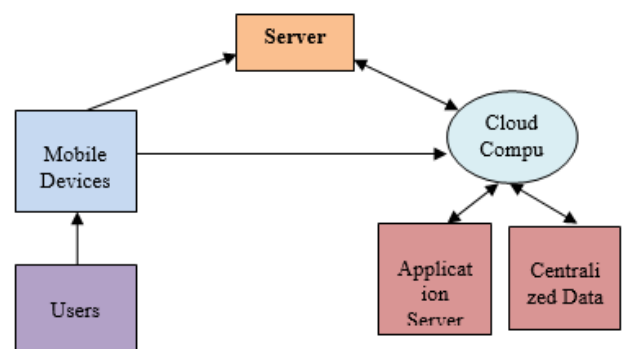

Figure 2: Aurechitecture of Mobile Cloud Computing

IV. APPLICATION OF MOBILE CLOUD COMPUTING

At present mobile cloud is being used very widely we are using it in various organizations or individually used in Mobile Commerce, Mobile Learning, Mobile Health Care, Mobile Gaming and many more with the help of mobile devices. Figure 3 shows the application of Mobile Cloud Computing.

A. Mobile Commerce

In mobile commerce Mobile devices are allow to business to business, business to customer, customer to customer and many other types of data are stored on the cloud which can be easily retrieved.

B. Social Media Networking

Social media networking is cloud-based technology in which users and any organization stores data on cloud storage through social media platforms and establishes a connection between social media platforms and users through networking.

C. Sharing Data

In this, we share or receive information or data on a cloud based platform through mobile devices. Users store huge amount of data or information on multiple platform cloud storage via mobile devices. this is also a good application of mobile cloud computing.

D. Mobile Gaming

The concept of mobile gaming is also our cloud based because whatever we play on it, the data and transaction of the player are stored on the cloud platform.

E. Mobile Learning

In mobile learning use mobile cloud online content, online class, what will see online material all this data is stored on cloud storage.
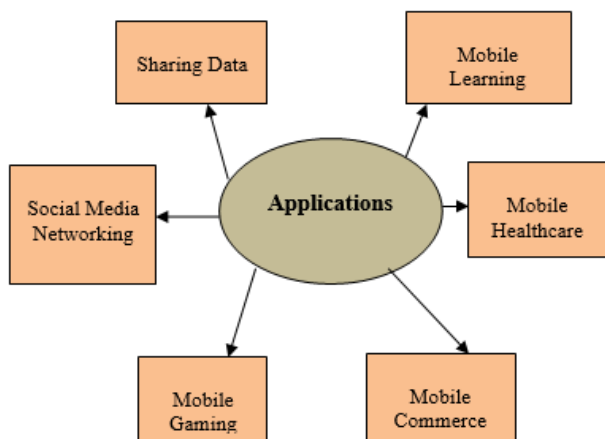

Figure 3: Applications of Mobile Cloud Computing

V. BENEEFITS OF MOBILE CLOUD COMPUTING

The benefits of mobile cloud computing empower a unique specialty. Compared to the current mobile computing. It has many possibilities that can be used in research work, covering many areas such as natural language processing, image processing, querying, multimedia, sensor data applications and sharing of internet access [17]. Mobile cloud computing helps reduce the data storage limits of mobile devices and when mobile devices also works to increase battery life and also provides may technical facilities through mobile cloud like location awareness services etc. [18]. With the help of mobile cloud computing, we improve the storage capacity of our mobile devices like any users or organization can list their large amount of data in cloud storage. Like Facebook, amazon, flip-cart etc. to cloud their very large amount of data are sored using the cloud storage [19]. Table 1 shows the benefits of Mobile Cloud Computing.

Table 1: Benefits of Mobile cloud computing

Sr. No.	Drawback of Mobile Devices	Benefits of Mobile Cloud Computing
01	Storage Capacity is limited	Storage Capacity in Unlimited
02	Battery Life Issue	Battery Life is Increased
03	Sharing Data With another Devices is low	Accessing data on Demand and self service.

VI. CHALLENGES OF MOBILE CLOUD COMPUTING

The main goal of mobile cloud computing is to make cloud data accessible and accessed by users in a faster way. Such as data security challenges, mobile cloud application security challenges mobile, mobile device security challenges, offloading security challenges, privacy challenges etc. [20].

security and privacy challenges we come to know that the data of users is stored on cloud server through mobile devices where we are at risk of data loss and data recovery and mobile devices being many types of unauthorized applications. Due to which third party accesses our data, in cloud storage, we are at risk of many received malicious attacks.

Data Integrity refers to how pure, how complete and how accurate our data is, this means that the users can access the stored data on his cloud from any corner of the world and any type of data or information stored on cloud storage. Confidential data or any private data can store and retrieve information through mobile devices this type of data integration is lacking in mobile cloud computing.

In Mobile Cloud Computing the data of mobile devices is stored on the cloud through cloud based applications. These cloud based application consume a lot of energy and battery which has an impact on battery life and Connectivity Problem refers to the very low connectivity, low transfer speed users get through mobile devices when they store data to cloud or receive data from cloud [21].

Problems with security and privacy are natural as we are using a new technology and data is stored from different locations on cloud computing or applications available on our mobile devices or later installed also. It is a challenges for us that how we can save our data and privacy [22]. The Challenges/Issues for Mobile Cloud Computing is described in Table 2.

Table 2:. Mobile Cloud Computing Challenges/Issues

Sr. No.	Challenges	Issues
01	Challenges in Mobile Devices Transmission	Issues in Low Bandwidth
		Issue in Mobile Devices to acquiring cloud infrastructure
02	Challenges in Mobile Devices Network	Issues in Wireless Network
		Issues in Connection to one network to another
03	Challenges in Mobile Devices Running Applications	Issues in Compatibility
		Issues in Mobile Cloud computing confluence
04	Challenges in Security	Issues in Stored Information Security
		Issues in Device Privacy
		Issues in Unauthorized Attack
		Issues in Security Attack
		Issues in Cloud Application
		Issues in Virtualized Data Security
		Issues in Authentication

VII. CONCLUSION AND FUTURE SCOPE

In this paper, we studies what is mobile cloud computing technology and its security challenges. Mobile cloud computing is very beneficial for the users as it works in cloud computing with the help of mobile devices. Users are using various types of application in mobile devices through mobile, it is increasing day by day. Sharing the personal file, data or information of users on cloud storage through mobile cloud computing is a very challenging task because in this we are prone to fraud with many security issues or privacy issues. In the field of mobile cloud computing, we have learned that what can be the research interest that is going on in the trend at the present time and many types of areas have been seen in it, mainly data security and user privacy etc.

According to the research done in the past years, what are its drawbacks, which technology is being used in it, what are tis applications, what are it advantages. There are many security issue in mobile cloud computing And found that there are still found that there are still problems arising in this regarding data security, data confidentiality, mobile cloud application security, offloading security and privacy and these challenges can be worked on for future research areas. Through this paper, we look at the security issues in the future research area and need to work on it and we purposed work on its data security and privacy.

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