A Comparative Study of Significance of Mobile Cloud Computing in the Modern World

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Abstract: Mobile Cloud Computing (MCC) is the combination of cloud computing and mobile computing to bring rich computational resources to mobile users, network operators, as well as cloud computing providers. In mobile cloud computing brings an additional significant benefit. Mobile devices are restricted to fulfill the importance and need of smaller sizes, lighter in terms of weights, less power consumption, hand-held and carrying ease, toughness, water resistant etc. The two types of cloud computing, general-purpose mobile cloud computing (GPMCC) and application-specific cloud computing (ASMCC) which allow users to extended storage and hardware resources to performed expensive tasks on the cloud respectively. Privacy, data access and security are the major areas to work on, encryption, minimum-necessary exposure, effective and make data clean up the part of execution task will be the approach at this level.

Keywords: Mobile cloud computing.

1. Introduction

Mobile Cloud Computing (MCC) is the combination of cloud computing and mobile computing to bring rich computational resources to mobile users, network operators, as well as cloud computing providers.

Some of the key reasons that cloud computing is implemented is to substantially minimize or entirely eliminate downtimes and to cut costs for computer hardware systems allowing computation. A company must have a minimum number of hardware systems that can handle the maximum load on its system. The load and the flow are extremely unpredictable, which contributes to difficult equipment maintenance and expensive time and energy.

Remote cloud storage provides a major added value. Smart devices are confined to the need and value of smaller models, weight lighter, fewer power use, simple manual and transportation, locking, waterproof etc. Such issues are at the core of cell app hardware and software growth. Cloud storage allows access to these limited and left-off pieces, enabling users to manage cloud queries and execute cloud activities and deliver the results to their computer. Cloud storage is also strongly needed for mobile apps.

Cloud computing is a general mobile cloud computing (GPMCC) that offers general ways of enabling extended storage, sharing, etc. and application-specific cloud computing (ASMCC) allowing applications to perform costly tasks regarding cloud hardware.

2. Literature Survey

A. General purpose MCC solutions

This paper gives insight into the differences between GPMCC and MCC (ASMCC) implementations. Cloud infrastructure is a very general concept involving a diverse variety of activities. What it needs to receive the sticker is for a mobile user to access the network in order to utilize a chosen utility on request. There are some programs in the field that pursue this these days. Nevertheless, there is often a possibility that such tools are utilized for a wide range of uses to reduce the limited operational control of mobile apps. Systems may be established under which the activities often regionally carried out by the area unit on the Mobile Device Unit are outsourced to the cloud when they arise. It can seamlessly exploit remote machine machine computing resources without needing special applications built for that reason.

B. Improved design

Berkeley researchers also found the possibility of improving the efficiency of hardware-limited cloud operations. Their key strategy includes the development of virtual copies of smartphones on non-mobile computers and the mission execution of such virtual apps. As non-mobile devices typically have a lot of procedure control, this makes for better smartphone efficiency. It will change a broader variety of programs and eases the device developers' pressure of creating a ton of restricted framework ultra-efficient operating program.

3. Objectives

- To study and formulate the various technique to ensure the privacy of the users.
- To study and formulate the effective technique to access the data and security of the data. The security and access should not come at the cost of speedy accessibility of the data and requirement of higher hardware systems.

4. Methodology/Planning of Work

1. Collecting the data from user.
2. Encryption of the data using proper encryption algorithm.
3. Transferring data to cloud application/storage in order to process and store.
4. Decryption of the data using secure algorithm and based on minimum access principle for processing.
5. Re-encryption of the data before transferring result back to user's mobile device.
6. Providing result to user in human readable form with accuracy.

Mobile cloud computing encompasses numerous research fields and subjects. Here are some interesting research subjects in MCC.

MCC architecture: The innovation analysis work for MCC will concentrate on how the cost-effective modeling, design, testing, and evaluation of the creation of virtual clouds and networks can be used in a well-defined way. Close attention should be given in this regard to the architecture and testing of mobile application scalability, multi-tenant enterprise SaaS, mobile computing energy consumption, device usability and mobile protection.

MCC Wireless Networking: Monarch of virtual cloud networks covers multiple cellular networks and the Cloud. The primary research emphasis in the networking field will be creative protocols and communications techniques for the management of attractive requirements of energy effective communications, scalable network technology scalability and intelligent network access between networks, applications and computers.

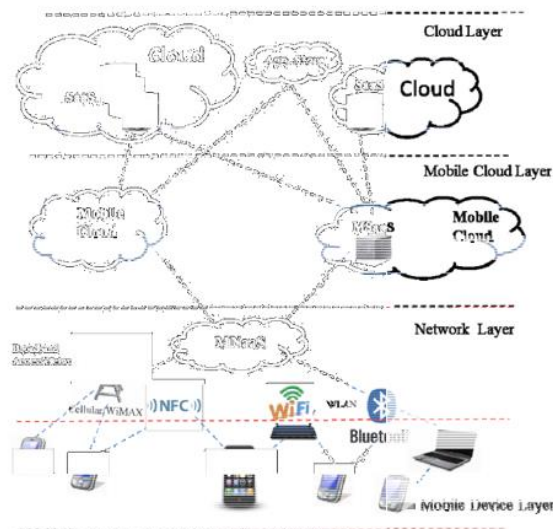## 5. Third Generation Model and Implementation

Fig. 1. Third-Generation: Mobile Cloud Service infrastructures, Agent-based Application Partitions

As Virgin Media Industry CEO Mark Heraghty pointed out, the explosiveness of mobile internet use has contributed to drastic improvements in client connectivity, handheld plastics substitute for transfers, new innovations including SDNs and Network Virtualization. It is an extremely creative and revolutionary age, as Lee Chooking suggested in [12], and believes that today's ICT operators look radically different from now for a decade. The smoothing is dedicated to Fixmo, Guardtime and Joyent. Switch. Switch. Therefore, the recent growth in mobile access involves a major change in the usage of cellular network networking systems in order to overcome existing cellular networks and services' severe limitations:

- Reduced network coverage scalability and protection for traffic.
- Carrier-oriented broadband network.
- Reduced portability and synchronization between different wireless networks controlled and hosted by wireless service providers.

6. Facilities Required for Proposed Work

- Linux operating system
- Bash 4.2 or above
- A text editor (vim, notepad++)
- Python 3
- A could hosting service (Preferably AWS)

7. Conclusion

The central point of concentration of the paper to identify and address the gaps in literature. The existing systems are either very restrictive in terms of security or very specific to particular applications or task in term of performance and security which is not very efficient and less or unnecessarily secure consuming major resources just to tackle with security. This research paper is to work in the area to find a flexible solution so that system cannot be too expensive in terms of time and resources. It first reviews mobile cloud computing concepts, motivations, and classifies different mobile cloud services. Then, the paper discusses the related research scope and its road map to mobile cloud computing. Particularly, it presents three generations of mobile cloud service infrastructures by comparing their key features and limitations. Moreover, the paper discusses the issues, challenges, and needs in mobile cloud computing for future research.

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