

Chapter 9

Mobile Cloud Computing

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ABSTRACT

A wide range of applications, many of which need ever-increasing processing capability, may now be supported by smartphones. Smartphones are resource-constrained devices with limited computation power, memory, storage, and battery; therefore, this presents a hurdle. Fortunately, dynamic resources for processing, storage, and service supply are nearly endless thanks to cloud computing technologies. In order to get beyond the limitations of smartphones, experts foresee expanding cloud computing services to mobile devices. Cloud computing, software as a service, community networks, online stores, and other application models have grown rapidly over the past several years as a result of developments in network-based computing and applications on demand. Since 2007, the scientific and business sectors have turned to studying cloud computing, an important application model in the Internet era. Since mobile cloud computing is still in its infancy, it is essential to have a complete understanding of the technology in order to identify the course of future research.

INTRODUCTION

Cloud computing on the go Mobile Cloud Computing (Cisco, n.d.) is a novel approach to developing mobile apps in which the majority of processing and data storage tasks are transferred from the mobile device to robust, centralized cloud computing infrastructure. Then, a thin native client or web browser on the device is used to access these centralized apps through the mobile Internet. This mobile cloud computing approach, meanwhile, still falls short of fully using the mobile network's potent contextual, marketing, and communications capabilities. Mobile Cloud Computing expands on the fundamentals of cloud computing by bringing attributes like on-demand access, no on-premise software, and "XaaS" (Everything as a Service) to the mobile domain. It also adds Network as a Service (NaaS) and Payment as a Service to the highest degree of on-demand capabilities and enables applications to fully utilize mobile networking and billing without the need for specialized application servers. After the "Cloud Computing" idea was presented in the middle of 2007, the term "Mobile Cloud Computing" was coined (Mell, n.d.).

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Figure 1. Mobile cloud computing



It has been grabbing the interest of researchers as a promising solution for green core IT as well as entrepreneurs as a lucrative business option that lowers the development and operating cost of mobile applications and mobile users as a new technology to achieve rich experience of a variety of mobile services at low cost.

As opposed to local computers or servers, mobile cloud computing uses virtualized resources that are dispersed across a large group of multiple distributed systems. Many mobile cloud computing-based applications have been created and made available to consumers, including Google's Gmail, mobile maps and navigation apps, voice search, certain apps for the Android platform, MobileMe from Apple, LiveMesh from Microsoft, and Motoblur from Motorola. The general architecture is depicted in Fig 1 below.

There are several difficulties and difficulties while delivering cloud services in a mobile context. Complex apps cannot be run on mobile devices owing to their inherent characteristics. Additionally, since a mobile device cannot constantly be connected to the internet, the offline functionality of the device must also be taken into account. The growth of mobile cloud computing may be hampered by the lack of standards, security and privacy requirements, and elastic mobile application requirements. Recognizing this unique method is crucial for providing more room for study and for recognizing the obstacles (Marston et al., 2011).

Fig.2 displays the general design of the MCC as presented by (Kosta et al., 2012). Base stations, such as base transceiver stations (BTS), access points, or satellites, are used to connect mobile devices to mobile networks by establishing and managing connections (air links) and functional interfaces between the networks and mobile devices. Requests and data from mobile users, such as their ID and location, are sent to central processors that are linked to servers that offer mobile network services (Qi & Gani, 2012).

Here, mobile network operators can offer AAA (Authentication, Authorization, and Accounting) services to mobile customers based on the subscriber's data kept in databases and the house agent (HA). Following that, the subscriber's requests are transmitted through the Internet to a cloud. In the cloud, the cloud controllers handle the requests and deliver the related cloud services to mobile users. These

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