Chapter 1
Analysis of Mobile Cloud Computing:
Architecture, Applications, Challenges, and Future Perspectives

Sushruta Mishra
C. V. Raman College of Engineering, India

Sunil Kumar Mohapatra
C. V. Raman College of Engineering, India

Brojo Kishore Mishra
https://orcid.org/0000-0002-7836-052X
C. V. Raman College of Engineering, India

Soumya Sahoo
C. V. Raman College of Engineering, India

ABSTRACT

This chapter describes how cloud computing is an emerging concept combining many fields of computing. The foundation of cloud computing is the delivery of services, software and processing capacity over the Internet, reducing cost, increasing storage, automating systems, decoupling of service delivery from underlying technology, and providing flexibility and mobility of information. However, the actual realization of these benefits is far from being achieved for mobile applications and open many new research questions. Together with an explosive growth of the mobile applications and emerging of cloud computing concept, mobile cloud computing (MCC) has been introduced to be a potential technology for mobile services. With this importance, this chapter provides an overview of mobile cloud computing in which its definitions, architecture, and advantages have been presented. It presents an in-depth knowledge of various aspects of Mobile Cloud Computing (MCC). We give a definition of mobile cloud computing and provide an overview of its features.

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INTRODUCTION TO CLOUD COMPUTING

Cloud is a huge collection of effortlessly approachable imaginary like utilities that can be used and accessed from anywhere, (for example software, hardware, advanced operating environments and applications). These operating environments and applications could be alterably re-designed to get accustomed to a varying burden, permitting likewise for best environment utilization. These environments and facilities are ordinarily known to be a per utilization payment arrangement where in insurances are guaranteed by the service issuer by method of altered service level agreements. This means truly that more information technology services, applications and technology are outsourced to outside sources over the Web, which finally will prompt a change in the conventional businesses where it is private cloud arranged to a virtual undertaking. This virtual endeavor, taking into account primarily cloud facilities, could be what's to come point of view. Then associations are investigating business process outsourcing, which includes the assignment of a whole business procedure to an unbiased gathering supplier, incorporating its supporting services. We utilize the internet to exchange data between any computing gadgets on the planet that are associated with the internet, however up to this point the greater part of the genuine computing we do has been performed mainly on the units themselves or on corporate networks. Right away, with an internet association and cloud computing, we can connect remotely with rich and effective, unbiased gathering, electronic frameworks, and utilize clearly unrestricted preparing power as though they were as of now incorporated with the nearby computing mechanisms, from anyplace at any time.

Cloud computing can be defined as a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (for example, networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. Some of the important properties of cloud computing are:

1. **Resource Efficiency:** Computing and network resources are pooled to provide services to multiple users. Resource allocation is dynamically adapted according to user demand.
2. **Elasticity:** Computing resources can be rapidly and elastically provisioned to scale up, and released to scale down based on consumer's demand.
3. **Self-Managing Services:** A consumer can provision cloud services, such as web applications, server time, processing, storage and network as needed and automatically without requiring human interaction with each service's provider.
4. **Accessible and Highly Available:** Cloud resources are available over the network anytime and anywhere and are accessed through standard mechanisms that promote use by different types of platform (e.g., mobile phones, laptops, and PDAs) Cloud computing is a computing paradigm, where a large pool of systems are connected in private or public networks, to provide dynamically scalable infrastructure for application, data and file storage. With the advent of this technology, the cost of computation, application hosting, content storage and delivery is reduced significantly. It is a practical approach to experience direct cost benefits and it has the potential to transform a data center from a capital-intensive set up to a variable priced environment. Enterprises can choose to deploy applications on Public, Private or Hybrid clouds. Cloud Integrators can play a vital part in determining the right cloud path for each organization. There are four primary cloud deployment models:
    a. **Public Cloud:** Public clouds are owned and operated by third parties; they deliver superior economies of scale to customers, as the infrastructure costs are spread among a mix of users,