



# Context-Aware Mobile Cloud Computing and Its Challenges

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*Context-aware application development models enable effective computation offloading for enhanced performance, energy efficiency, and execution support on mobile devices.*

**M**obile cloud computing evolved from cloud computing to address the needs of the ever-increasing number of smartphone users and inherent smartphone constraints, such as limited computational power, memory, storage, and energy. Because mobile cloud computing is a comparatively new domain, it has no standard definition and different researchers provide varying definitions. For example,

Mobile cloud computing is an integration of cloud computing technology with mobile devices to make the mobile devices resource-full in terms of computational power, memory, storage, energy, and context awareness.<sup>1</sup>

In mobile cloud computing, “cloud” can refer to both real and virtual clouds. Real cloud refers to the traditional cloud infrastructure that provides virtually unlimited resources, such as Amazon Elastic Compute Cloud (EC2), Microsoft Azure, and Google App Engine. Real cloud service models include software as a service (SaaS), platform as a service (PaaS), and infrastructure as a service (IaaS). Real cloud also includes multiple cloud deployment models, such as private, community, public, and hybrid. Virtual cloud, on the other hand, refers to a nearby infrastructure, such as servers and personal computers, providing services to the mobile devices.<sup>1</sup>

Mobile cloud computing uses two types of architectures. In an *infrastructure-based* system, the cloud hardware infrastructure remains stationary and provides services to mobile users, via Wi-Fi or cellular-network-based Internet connections. In an *ad hoc*