

Research on cloud computing technologies and their application in building smart parking lots.

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Abstract: This study investigates cloud computing technologies and their application in the development of smart parking systems. As urban populations grow, the demand for efficient parking management has intensified, necessitating intelligent solutions that reduce congestion and optimize space utilization. This research systematically analyzes core cloud computing models—including Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS)—and their integration with Internet of Things (IoT) sensors and data analytics. A conceptual architecture for a cloud-based smart parking system is proposed, enabling real-time monitoring, dynamic pricing, and predictive availability through centralized data processing. The findings demonstrate that cloud platforms offer scalable storage, robust computational power, and cost-effective deployment, significantly enhancing system responsiveness and user accessibility. Furthermore, the study addresses critical challenges such as data security, latency, and interoperability. The results provide a practical framework for urban planners and developers, highlighting the transformative potential of cloud computing in creating sustainable, intelligent urban infrastructure.

Keywords: cloud computing, smart parking, IoT, cloud-based applications