Chapter 12
Managing Cloud Services on Sensor Nodes for Efficient Wireless Energy Harvesting

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ABSTRACT

Wireless Sensor Networks are integral to a wide array of smart applications, including environmental supervision, healthcare, and manufacturing automation. However, the operation of sensor nodes is often constrained by limited energy resources. Efficient wireless energy harvesting (WEH) is a promising solution that can extend the operational lifetime of these nodes. Managing cloud services on sensor nodes plays a critical role in optimizing energy consumption and ensuring effective integration of WEH technologies.

DOI: 10.4018/979-8-3693-9984-2.ch012

INTRODUCTION

Describe Wireless Sensor Networks are integral to a wide array of smart applications, including environmental supervision, healthcare, and manufacturing automation. However, the operation of sensor nodes is often constrained by limited energy resources. Efficient wireless energy harvesting (WEH) is a promising solution that can extend the operational lifetime of these nodes. Managing cloud services on sensor nodes plays a critical role in optimizing energy consumption and ensuring effective integration of WEH technologies (Abu Bakar et al., 2023). This chapter explores strategies and frameworks for managing cloud services on sensor nodes to achieve efficient wireless energy harvesting.

Cloud service are networked systems that enable real time transmission. This communication involves smart sensors, client devices, and IoTs. It facilitates data transmission crucial for decision-making (Adu-Manu et al., 2018). This connectivity, coupled with information transparency, enhances decision-making with comprehensive insights and analytics. Innovations in technology such as smart systems and machine learning are integral components of to manage cloud service. These technologies provide intelligent assistance, streamline processes, and increase productivity across various industrial tasks (AlHaddad et al., 2023). Cyber-physical systems, which autonomously make decisions based on collected data, enhance the responsiveness and efficiency of industrial environments. However, the heightened connectivity necessitates robust cybersecurity measures. Protecting systems and data from cyber threats is critical as digital infrastructure expands (Ali et al., 2022). Figure 1 below present a cloud communication using sensor node.

Figure 1. Cloud-service Interaction with Sensor Nodes