# Chapter 3
# Cloud Deployment Models:
## Standard and Framework

**Azana Hafizah Mohd Aman**
https://orcid.org/0000-0001-7337-6736
*Faculty of Information Science and Technology, Bangi, Malaysia*

**Wan Muhd Hazwan Azamuddin**
https://orcid.org/0000-0002-8124-6226
*Institut Latihan Perindustrian, Tangkak, Malaysia*

**Maznifah Salam**
https://orcid.org/0000-0003-1332-260X
*Faculty of Information Science and Technology, Bangi, Malaysia*

**Zainab S. Attarbashi**
https://orcid.org/0000-0002-1452-8098
*Kulliyyah of Information and Communication Technology, Malaysia*

## ABSTRACT

*This chapter provides a comprehensive overview of cloud deployment models, including public, private, hybrid, and community clouds, and their profound impact on modern IT infrastructure and the development of inclusive IoT smart systems. The selection of an appropriate cloud model significantly influences critical aspects such as data sovereignty, scalability, resource utilization, and crucially, the accessibility features for individuals with disabilities. We examine the distinct characteristics, advantages, and disadvantages of each model, highlighting how they cater to diverse organizational needs, from cost optimization and rapid provisioning in public clouds to enhanced security and control in private environments. The discussion also ad-*

DOI: 10.4018/979-8-3693-9984-2.ch003

*dresses the complexities and benefits of hybrid and community cloud approaches, emphasizing their role in enabling flexible, compliant, and collaborative computing solutions. Understanding these models is essential for making informed strategic decisions that foster innovation and ensure equitable access to technology.*

## 1.0 INTRODUCTION TO CLOUD DEPLOYMENT MODELS

In the rapidly evolving landscape of cloud computing, understanding the various deployment models is crucial for organizations looking to leverage cloud resources effectively. Cloud deployment models, which include public, private, hybrid, and community cloud, define the structural framework for deploying cloud computing resources and services (Ellman et al., 2023). These models are critical for IoT-enabled smart systems, profoundly influencing aspects such as data sovereignty, scalability, and resource utilization (Azumah et al., 2023). For instance, a public cloud provides economies of scale and rapid provisioning, making it ideal for resource-intensive applications, whereas a private cloud offers superior control over data security and compliance, which is vital for applications handling sensitive personal health information (Kumara et al., 2023; Liu et al., 2024).

Choosing the right cloud deployment option is critical to ensuring the accessibility and inclusivity of IoT smart solutions for people with disabilities. Real-time data streaming and processing, fundamental for applications utilizing speech recognition, gesture control, and environmental sensing, necessitates a durable and scalable cloud infrastructure (Bruno et al., 2024; Rajendran et al., 2023). The chosen model significantly impacts the accessibility features that can be implemented, including customizable user interfaces, the capacity to integrate assistive devices, and real-time data processing for personalized recommendations and adaptive functionalities (Ajaz et al., 2024). Formal approaches are being developed to fragment large-scale workflow processes and their applications for deployment across multiple and heterogeneous cloud computing environments, providing a theoretical basis for designing maximally distributed workflow processes (Ahn & Kim, 2021). Furthermore, research explores various cloud-based deployment archetypes for cloud applications, examining tradeoffs related to high availability, low end-user latency, and acceptable costs across zonal, regional, multi-regional, global, hybrid, and multi-cloud configurations (Berenberg & Calder, 2023). The suitability of a deployment strategy, which is not standardized, heavily depends on the application type and specific business requirements, highlighting the need for careful evaluation of metrics like reliability and cost (Harris et al., 2024).