

Securing Multi-Tenant Cloud Environments Using Machine Learning And Zero Trust Architectures

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Abstract:

This study examines how ML and ZTA safeguard multi-tenant cloud settings. Many clients or organisations use cloud services on a common infrastructure in these contexts. More people are using cloud computing, raising security worries. In multi-tenant setups, faults could expose sensitive data to several renters.

This study examines how machine learning can be used to analyse massive amounts of real-time cloud data to find anomalies and hazards that could compromise data integrity or tenant isolation.

The study seeks to investigate how rigorous, dynamic access control measures might prohibit undesirable access and mobility in cloud networks, regardless of user location.

ZTA uses "never trust, always verify" to do this. ML for threat detection and ZTA for strict access verification create a more resilient and adaptive security system. This framework can adapt to sophisticated multi-tenant cloud environments, providing robust data protection for each tenant.

This study examines how ML and ZTA might improve cloud security for multi-tenant systems. This project creates a strong and adaptable security framework to reduce tenant data breaches and unauthorised access. Machine learning to identify risks in real time and ZTA's strict access limits will achieve this. This integrated strategy protects shared cloud infrastructure while retaining tenant isolation and data integrity in a scalable and organization-specific solution.

To analyse the fundamental ideas and principles that form the basis of multi-tenant cloud computing, including its definition, features, and constituents.

To evaluate the advantages and difficulties of implementing a multi-tenant cloud strategy, examining aspects such as adaptability, robustness, efficiency enhancement, administrative intricacies, security considerations, and compatibility problems.

To explore how Machine Learning and Zero Trust Architecture can be combined to enhance security in multi-tenant cloud environments.

Keywords:

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