

DYNAMIC POLICY-DRIVEN AUTOMATION FOR SECURITY COMPLIANCE IN CLOUD MANAGEMENT PLATFORMS

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ABSTRACT

With the rapid adoption of cloud computing, ensuring continuous security compliance across dynamic cloud environments has become increasingly complex. Traditional manual methods for compliance monitoring and enforcement are no longer sufficient to address the scale, speed, and dynamic nature of cloud operations. As a solution, dynamic policy-driven automation has emerged as a critical approach for managing security compliance in cloud management platforms. This paper explores the evolution of dynamic policy-driven automation from 2015 to 2024, focusing on its role in automating the enforcement of security compliance policies across cloud infrastructures. The literature highlights several advancements in this area, including the integration of machine learning, AI, and blockchain technologies to enhance the adaptability and transparency of compliance automation. AI-powered systems have shown the ability to predict and proactively address compliance violations, while blockchain ensures immutable records of policy enforcement actions. Furthermore, integration with Continuous Integration/Continuous Deployment (CI/CD) pipelines has allowed security policies to be enforced from the early stages of development to production deployment, reducing the risk of non-compliance. The increasing complexity of multi-cloud and hybrid cloud environments has driven innovations in automated compliance tools that can support the specific requirements of different cloud platforms. Additionally, the role of DevSecOps practices in embedding security into every phase of the development lifecycle has been emphasized. As cloud environments evolve, dynamic policy-driven automation continues to provide a scalable, efficient, and reliable solution for maintaining compliance and mitigating security risks in real-time. This paper underscores the importance of automation in achieving consistent and adaptable cloud security compliance in modern IT infrastructures.

KEYWORDS: *Dynamic Policy-Driven Automation, Cloud Security Compliance, AI-Powered Automation, Machine Learning, Blockchain, Multi-Cloud Environments, CI/CD Pipelines, DevSecOps, Real-Time Compliance Enforcement, Cloud Management Platforms, Security Policy Automation, Cloud Compliance Tools, Regulatory Compliance, Cloud Infrastructure Security.*

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