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KUBERNETES FOR PERFORMANCE ENGINEERING: A SCALABLE TESTING FRAMEWORK

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Abstract

This comprehensive article explores the transformation of Kubernetes from a container orchestration platform into a powerful performance engineering solution. The article examines how organizations are leveraging Kubernetes to address traditional performance testing challenges in modern distributed architectures and microservices environments. It investigates the implementation of a Kubernetes-based testing framework, focusing on JMeter pod configurations, auto-scaling capabilities, and advanced monitoring solutions. Through detailed case studies and empirical research, the article demonstrates how Kubernetes enables more efficient resource utilization, improved scalability, and enhanced test reliability. The article also covers the integration of artificial intelligence in monitoring and observability, showcasing how modern testing frameworks can better simulate real-world conditions and identify performance bottlenecks.

Author Keywords

Kubernetes Performance Testing, Container Orchestration, Microservices Testing, Distributed Load Testing, Cloud-Native Performance Engineering.

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