

Exploring Security Challenges and Solutions in Kubernetes: A Comprehensive Survey of Challenges and State-of-the-Art Approaches

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Abstract: *This research paper presents a comprehensive and in-depth study of Kubernetes security Challenges and solutions. The research takes a systematic approach starting at the container level and ending with the pod and the broader Kubernetes cluster. This paper analyses vulnerabilities at these various levels to reveal potential vulnerabilities and challenges. This paper also examines certain high-availability techniques that can enhance a Kubernetes cluster's overall effectiveness. The findings of this study will help to improve knowledge of Kubernetes' high availability and security features as well as throw some light on container-specific strategies and sensitivities to increase system stability and reduce vulnerability.*

Keywords: Kubernetes, security solutions, high availability, container vulnerabilities, pod analysis, Kubernetes cluster, system resilience, strategies

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