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課題研究報告書

DevSecOps スキームにおいて脆弱性逓減を可能にする OSS ベースの環境調査

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Abstract

DevSecOps is a technique for automating the integration of development, security, and operations in software development, to consider security at every stage of the software development life cycle. However, managing vulnerabilities in a DevSecOps environment presents several challenges, including understanding the type and impact of vulnerabilities, speeding up vulnerability detection and resolution, and preventing vulnerabilities from recurring.

In this research, I present an open-source software (OSS)-based methodology to address these challenges and create an environment that enables effective vulnerability management in a DevSecOps scheme. This methodology includes threat analysis technologies such as STRIDE, continuous security testing, automated vulnerability scanning, policy checking, and security auditing, as well as Kubernetes for container orchestration, GitHub for source code scanning, and cloud services for constructing a DevSecOps environment.

I applied this methodology to a DevSecOps environment built on cloud services and investigated its efficacy in managing vulnerabilities. The results showed that the method enables the detection of vulnerabilities in the development and operational phases and demonstrated that the method is suitable for vulnerability management in a DevSecOps environment by improving the understanding of vulnerability types and impacts and responding to them.