

Analyzing the performance of DevOps integral components continuous integration/continuous deployment (CI/CD) modules, investigating the functionality and the possibility of improving its software

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DevOps relies heavily on Continuous Integration/Continuous Deployment (CI/CD) modules to streamline software delivery. However, optimal performance and comprehensive functionality are crucial for maximizing efficiency and user experience. This research delves into these critical aspects by analyzing the performance of integral CI/CD modules, investigating their functionality, and exploring possibilities for software improvement. We systematically analyze the performance of various CI/CD modules, identifying bottlenecks and limitations through rigorous testing and data analysis. We comprehensively investigate the functionalities of selected modules, uncovering potential gaps and limitations impacting user needs and desired workflows. We propose concrete improvements and optimizations for the CI/CD software, drawing upon performance analysis, functionality investigation, and industry best practices. We evaluate the potential impact of our proposed improvements through simulations or demonstrations, highlighting the benefits for CI/CD efficiency and user experience. This research contributes to the advancement of CI/CD practice by offering: A systematic approach to analyze and improve CI/CD module performance, Insights into the functional limitations of existing CI/CD tools and potential user pain points, Data-driven recommendations for optimizing CI/CD software and enhancing its capabilities, A stimulus for further innovation and development in the CI/CD ecosystem. This work ultimately aims to empower DevOps practitioners with valuable knowledge and actionable solutions to optimize their CI/CD pipelines, leading to faster, more reliable, and user-friendly software delivery.