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Scalable Cloud Deployment and Automation for E-Commerce Platforms Using AWS, Heroku, and Ruby on Rails

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Abstract: *The rapid expansion of e-commerce has intensified the need for scalable, reliable, and responsive infrastructures to support surges in demand, dynamic content, and real-time user interactions. Cloud computing has revolutionised the e-commerce industry by offering scalable, cost-effective, and efficient solutions to address the growing demands of businesses. This paper explores the deployment and automation strategies for e-commerce platforms, emphasising the use of Amazon Web Services (AWS), Heroku, and Ruby on Rails. The discussion begins with an overview of cloud computing, its deployment models, and the key concepts of scalability and automation. Critical aspects like Infrastructure as Code (IaC), Continuous Integration/Continuous Deployment (CI/CD), auto-scaling, and monitoring are highlighted to demonstrate the efficiency of cloud-based systems. Additionally, the role of cloud platforms in enhancing the operational flexibility, security, and performance of e-commerce platforms is discussed. Examples of popular cloud-supported e-commerce platforms like Shopify, BigCommerce, and Wix are provided to illustrate real-world applications. By leveraging AWS for infrastructure, Heroku for seamless deployment, and Ruby on Rails for robust application development, this paper presents a comprehensive approach to building adaptive and high-performing e-commerce platforms.*

Keywords: Cloud Computing, E-commerce, Heroku, Ruby on Rails, Automation, Continuous Deployment, Scalability, AWS

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