

DoCloud: An Elastic Cloud Platform for Web Applications Based on Docker

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Abstract—Internet is growing at an alarming rate, and Web applications have permeated every aspect of people's life. Cloud computing provides a powerful computing model that allows users to access resources on-demand and pay as they use. Cloud computing attracts an increasing number of developers to migrate their Web applications to cloud platforms. Cloud platforms should provide elasticity ability to change the amount of resources allocated to a Web application in order to meet the actual varying demands because of the changing workload. In this paper, we design and implement DoCloud which is an elastic cloud platform based on Docker. In DoCloud, we adopt adding or removing Docker containers to change a Web application's resource and we build a hybrid elasticity controller that incorporates proactive model and reactive model for scale out coupled with proactive model for scale in. Our experiments show that DoCloud can dynamically allocate resources to applications within seconds and maintain higher resource utilization in a single container.

Keyword—cloud computing; autoscale; Docker; elasticity; hybrid controller



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