IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.53
Volume 4, Issue 2, November 2024

Comprehensive Analysis of Cloud Computing Performance Factors: Investigating the Impact of Response Time, Load Balancing and Service Broker Policies on Cloud Service Efficiency Using CloudSim Simulation

Zaid Khan Pathan[1], Nikhil Dharmendra Singh[2], Kunal Randhir Sharma[3], Harsh C Vachheta[4]
Department of Electronics & Computer Science,
Pillai College of Engineering, Navi Mumbai, Maharashtra, India[1]
Department of Information Technology
Thakur College of Engineering and Technology [TCET], Mumbai, Maharashtra, India[2,3,4]
zpatham20ecs@student.mes.ac.in, 1032210683@tcetmumbai.in
1032210669@tcetmumbai.in, harshvachheta1@gmail.com

Abstract: *Cloud performance refers to the efficiency and effectiveness with which a cloud system operates delivering hosted services over the internet. As cloud computing continues to offer flexibility, scalability and computational power monitoring and improving cloud performance is essential. Performance optimization is influenced by factors such as load balancing and service broker policies which impact system response times and overall user experience. This paper provides an in-depth review of key publications and real-time cloud performance tools identifying critical performance factors that affect cloud efficiency. Notably, response time emerged as a fundamental metric for cloud service quality. Using CloudSim simulation we examine cloud performance evaluation criteria and experimentally assess the impact of response time dependencies on broker policies, load balancing techniques and data center distribution. This study offers a framework for understanding cloud performance evaluation and highlights strategies to enhance user experience in diverse cloud environments.*

Keywords: Cloud computing, performance evaluation, response time, load balancing, service broker policies, CloudSim simulation, data center distribution, cloud optimization, user experience