Intra-Datacenter Load Balancing in a Federated Cloud with Throttled Algorithm

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V.

CONCLUSION

Authors
Figures
References
Keywords
Metrics

Abstract:
The emergence of cloud computing technology has motivated a very high number of users in different organizations to access its services in running and delivering their various operations and services. However, this surge of cloud users has led to the problem of uneven load sharing among the cloud computing infrastructures. As a result, federated cloud infrastructure was initiated to provide more cloud computing resources to accommodate more cloud users' requests and also to provide equal requests mapping with the available cloud resources. Nevertheless, the issue of unequal allocation of requests within the datacenter(s) that makes up the federated cloud environment still persists. This research work presents an intra-datacenter load balancing algorithm in a federated cloud environment named; the intra-balancer adapted throttled algorithm to evenly distribute requests in each datacenter that formulate the federated cloud infrastructures. The simulation of the intra-balancer was carried out in CloudAnalyst, the results of the implementation showed that the intra-balancer outperformed the Round-Robin and ESCE with 98.93ms and 2.26ms for the response and processing time respectively. The results assert that the intra-balancer algorithm provides a better load balancing solution in a federated cloud environment.

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I. INTRODUCTION

The growing popularity of cloud computing technologies has increased demand for various types of computing services at more affordable prices, encompassing application hosting, content storage, and others [1]. The term “cloud computing” refers to a collection of adaptable computing resources such as networks, servers, storage, applications, and services that may be accessed on demand [2]. Due to this most recent breakthrough in computing and the benefits that are involved with cloud computing, Information Technology (IT) users are now embracing it for their personal computing operations and services. The delivery of these computing resources by Cloud Service Providers (CSPs) through the Internet is usually categorized into service and deployment models [3], [4]. The former defines the various computing resources available for requests in a cloud computing domain these include Software-as-a-Service (SaaS), Platform-as-a-Service (PaaS) and Infrastructure-as-a-Service (IaaS), while the latter defines how cloud users access the cloud computing infrastructures [2], [4], [5]. These models involving this category include:

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