

Accepted Manuscript

A game theory-based dynamic resource allocation strategy in
geo-distributed datacenter clouds

Xiaoqun Yuan, Geyong Min, Laurence T. Yang, Yi Ding, Qing Fang



PII: S0167-739X(16)30775-0

DOI: <http://dx.doi.org/10.1016/j.future.2017.04.046>

Reference: FUTURE 3448

To appear in: *Future Generation Computer Systems*

Received date: 17 December 2016

Revised date: 7 April 2017

Accepted date: 29 April 2017

Please cite this article as: X. Yuan, et al., A game theory-based dynamic resource allocation strategy in geo-distributed datacenter clouds, *Future Generation Computer Systems* (2017), <http://dx.doi.org/10.1016/j.future.2017.04.046>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



A Game Theory-based Dynamic Resource Allocation Strategy in Geo-distributed Datacenter Clouds

Xiaoqun Yuan^{a,*}, Geyong Min^b, Laurence T. Yang^{c,d}, Yi Ding^d, Qing Fang^a

^a*School of Information management, Wuhan University, Wuhan, China*

^b*Department of Mathematics and Computer Science, College of Engineering, Mathematics and Physical Sciences, University of Exeter, Exeter, EX4 4QF, U.K.*

^c*School of Computer Science and Technology, Huazhong University of Science and Technology, China*

^d*Department of Computer Science, St. Francis Xavier University, Antigonish, NS, Canada*

Elsevier use only: Received date here; revised date here; accepted date here

Abstract

Geo-distributed Datacenter Cloud is an effective solution to store, process and transfer the big data produced by Internet-of-Things (IoT). A key challenge in this distributed system is how to allocate the bandwidth resources among these geo-distributed datacenters of this cloud efficiently. This paper aims to address this challenge by optimizing the transfer bandwidth resources among different geo-distributed datacenters. To this end, we firstly analyze the interaction between the traffic of physical networks and the data flow of Geo-distributed Datacenter Clouds, and then establish a game theory-based model for cloud resource allocation. Based on this model, a dynamic resource allocation strategy and its corresponding algorithm that are adaptable to the Internet conditions are proposed. Since the background traffic, capacity limit of physical networks as well as the flows and resource demands of geo-distributed datacenters are taken into account, this new strategy can achieve the load balance of the physical networks and content transferring among different geo-distributed datacenters effectively. The real-world trace data is adopted to validate the effectiveness and efficiency of the proposed resource allocation strategy. Compared with existing strategies, the evaluation results demonstrate that our proposed strategy can balance the workloads of physical networks, reduce the response delay of cloud applications, and possess an excellent adaptability. © 2011 Elsevier Science. All rights reserved

Keywords: Geo-distributed Datacenters, Cloud Computing, Resource Allocation, Game Theory;

Download English Version:

<https://daneshyari.com/en/article/4950301>

Download Persian Version:

<https://daneshyari.com/article/4950301>

[Daneshyari.com](https://daneshyari.com)