Accepted Manuscript

Resource provisioning for data-intensive applications with deadline constraints on hybrid clouds using Aneka

Adel Nadjaran Toosi, Richard O. Sinnott, Rajkumar Buyya

PII: S0167-739X(17)30186-3
DOI: http://dx.doi.org/10.1016/j.future.2017.05.042
Reference: FUTURE 3490

To appear in: *Future Generation Computer Systems*

Received date : 3 February 2017
Revised date : 26 April 2017
Accepted date : 30 May 2017

Please cite this article as: A. Toosi, R. Sinnott, R. Buyya, Resource provisioning for data-intensive applications with deadline constraints on hybrid clouds using Aneka, *Future Generation Computer Systems* (2017), http://dx.doi.org/10.1016/j.future.2017.05.042

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.

ACCEPTED MANUSCRIPT

Resource provisioning for data-intensive applications with deadline constraints on hybrid clouds using Aneka

Adel Nadjaran Toosi, Richard O. Sinnott, Rajkumar Buyya

The Cloud Computing and Distributed Systems (CLOUDS) Laboratory,
School of Computing and Information Systems,
The University of Melbourne, Australia

Abstract

Cloud computing has emerged as a mainstream paradigm for hosting various types of applications by supporting easy-to-use computing services. Among the many different forms of cloud computing, hybrid clouds, which mix on-premises private cloud and third-party public cloud services to deploy applications, have gained broad acceptance. They are particularly relevant for applications requiring large volumes of computing power exceeding the computational capacity within the premises of a single organization. However, the use of hybrid clouds introduces the challenge of how much and when public cloud resources should be added to the pool of resources – and especially when it is necessary to support quality of service requirements of applications with deadline constraints. These resource provisioning decisions are far from trivial if scheduling involves data-intensive applications using voluminous amounts of data. Issues such as the impact of network latency, bandwidth constraints, and location of data must be taken into account in order to minimize the execution cost while meeting the deadline for such applications. In this paper, we propose a new resource provisioning algorithm to support the deadline requirements of data-intensive applications in hybrid cloud environments. To evaluate our proposed algorithm, we implement it in Aneka, a platform for developing scalable applications on the Cloud. Experimental results using a real case study executing a data-intensive application to measure the walkability index on a hybrid cloud platform consisting of dynamic resources from the Microsoft Azure cloud show that our proposed provisioning algorithm is able to more efficiently allocate resources compared to existing methods.

Download English Version:

https://daneshyari.com/en/article/6873398

Download Persian Version:

https://daneshyari.com/article/6873398

Daneshyari.com