

Mission statement

Cloud Computing is a fast growing industry with increasing number of users. Developers with innovative ideas can try out their new services using cloud, without investing in huge amounts of hardwares [1]. It is claimed that cloud computing gives users the illusion of infinite computing resources available on demand [1], but the quality of computing resources is difficult to measure without the information of physical machines operational data such as compute utilization and bandwidth utilization (This claim needs to be supported by finding some papers or change to another claim). It is also claimed that cloud computing allow users to pay for the use of computing resources on a short-term basis as needed [1], but as today's public cloud is dominated by few cloud vendors and operational data is also known only within those vendors, the billing is merely decided by the few vendors, with little to no considerations of brands, performance, security, price or greenness. The Open Cloud Exchange (OCX) is envisioned as a public cloud marketplace in which many stakeholders, rather than just a single provider, participate in implementing and operating the cloud [2]. We claim that this cloud marketplace can be better functioned in its competitiveness and performance if we provide physical machines' operational data to users.

Service providers as well as end users have multiple options in their hardware choices. Without the operational data of hardware, their only choosing standard would be the trust for a company which provides the hardware. Service providers can choose hardware based on their needs other than quantity of processors and storage knowing machines' operational data. For example, if a service provider consumes a lot of bandwidth, they can then choose a cluster

without a lot of bandwidth usage in average, based on their knowledge of knowing operational data from cluster to cluster. End users can have a more considerate choice based on the hardware information they get from the cloud. They can choose their services based on factors such as brands, performance, security, price and even greenness.

Researchers can develop new software or algorithms for a better performance with operational data of hardwares. An open cloud can have many open-source cloud computing solutions, such as OpenStack and Eucalyptus [3]. An OpenStack compute (nova) hypervisor cannot talk to other nova hypervisors. Without knowing computes utilizations of other clusters, controlled by other nova hypervisors, this nova can only schedule jobs to its own cluster even if it is already fully occupied. (This part needs to be explained more accurately with OpenStack papers)

Our goal is to expose operational data of computes, storage and network, which are the three major components to a cloud, in a readable, organized and meaningful way to users as well as researchers. We will first design and populate a database with the operational data such as compute utilization, storage utilization and network utilization. Operational data, such as daily utilization average or hourly utilization average, will also be stored for analytic purposes. It is desired to show the data in a visualization tool. An API is also desired for the ease of usage and for fitting users purposes of using the database.

Work Cited

[1] Above the Clouds: A Berkeley View of Cloud Computing. Technical Report No. UCB/EECS-2009-28 <http://www.eecs.berkeley.edu/Pubs/TechRpts/2009/EECS-2009-28.html>

[2] Bestavros,Azer., Krieger,Orran. *Toward an Open Cloud Marketplace: Vision and First Steps*

[3] Takako,P., Estcio,G., Kelner,J., Sadok,D. (2010) . *A Survey on Open-source Cloud Computing Solutions*.WCGA - 8th Workshop on Clouds, Grids and Applications.Gramado:28 May, 3-16. Teyssier,S. (2010).