Procedia
Computer Science

International Conference on Computational Modeling and Security (CMS 2016)

Modified Round Robin Algorithm for Resource Allocation in Cloud Computing

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Abstract

Cloud computing is an attractive computing model since it allows for the provision of resources on-demand. Cloud computing has emerged as a new technology that has got huge potentials in enterprises and markets. Clouds can make it possible to access applications and associated data from anywhere. Companies are able to rent resources from cloud for storage and other computational purposes so that their infrastructure cost can be reduced significantly. Hence there is no need for getting licenses for individual products. Cloud Computing offers an interesting solution for software development and access of content with transparency of the underlying infrastructure locality. The Cloud infrastructure is usually composed of several data centers and consumers have access to only a slice of the computational power over a scalable network. The provision of these computational resources is controlled by a provider, and resources are allocated in an elastic way, according to consumers' needs. However one of the major pitfalls in cloud computing is related to optimizing the resources being allocated. The other challenges of resource allocation are meeting customer demands and application requirements. In this paper, modified round robin resource allocation algorithm is proposed to satisfy customer demands by

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reducing the waiting time.

1. Introduction

Currently Cloud Computing[3,4] is an emerging computing technology which is the big step in development and deployment of an increasing number of distributed applications. Cloud Computing is defined as the computing model that operates based on Clouds. In turn, the Cloud is defined as a conceptual layer[11] that operates above an infrastructure to provide services in a timely manner. Cloud computing emerges as a new computing paradigm which aims to provide reliable, customized and QoS (Quality of Service) guaranteed computing dynamic environments for end-users[2].Distributed processing, parallel processing and grid computing together emerged as cloud computing. The basic principle of cloud computing is that user data is not stored locally but is stored in the data center of internet.

According to the NIST definition[15], Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.

Cloud computing nowadays becomes quite popular among community of cloud users by offering a variety of resources. Cloud computing platforms[12], such as those provided by Microsoft, Amazon, Google, IBM, and Hewlett-Packard, let developers deploy applications across computers hosted by a central organization. Developers obtain the advantages of a managed computing platform, without having to commit resources to design, build and maintain the network.

There are numerous advantages of cloud computing the most basic ones being lower costs, re-provisioning[16] of resources and remote accessibility. Cloud computing lowers cost by avoiding the capital expenditure by the company in renting the physical infrastructure from a third party provider. Due to the flexible nature of cloud computing, we can quickly access more resources from cloud providers when we need to expand our business. The remote accessibility enables us to access the cloud services from anywhere at any time. To gain the maximum degree of the above mentioned benefits, the services offered in terms of resources should be allocated optimally to the applications running in the cloud.

Cloud computing, at its simplest, is a collection of computing software and services available from a decentralized network[4] of servers. The term "cloud" has long been used as a metaphor for the Internet, and there are many popular services and Web sites which you may already be enjoying, without being aware that they are cloud-based. Social networking sites, Web-based email clients like Yahoo! and Gmail, Wikipedia and YouTube, and even peer-to-peer networks like Skype or Bit Torrent are all applications that run in the cloud.