

A Review on Cloud Server Optimization Using Orthogonal Recursive Bisection Technique for Cloud Migration

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Abstract - Cloud computing is the concept that provides online resources and services to cloud user to accomplish its task and gain profit by not buying extra hardware and software. One of the most extreme areas is cloud server optimization. To optimize its performance concern we performed the migration of resources to handle the load factor. In this paper we have implemented and compared one load balancing strategy called orthogonal recursive bisection algorithm to group server nodes into a balanced tree and then migrate resources so to keep the tree balanced. After that we computed the results of Pre Migration and Post Migration in terms of best and worst server virtual machines. We have taken initially 500 virtual machines for migration. We also analyzed the behavior of migrated virtual machines through different parameters like energy consumption, load factor, resource utilization and total time taken to migrate all resources.

Keyword – cloud computing, pre migration, post migration, virtual machine

1.1 INTRODUCTION

Cloud computing is divided into two parts cloud and computing where cloud mean internet and computing mean to access the internet resources or utilizing computer technology to complete a task. In this user does not need to worry about of the configuration of services it simply used on pay per model where everything is handle by cloud system. It stores data and application on remote server and access them via internet rather than save on personal computer and provide hardware and software services in seem less way.

1.2 CLOUD MIGRATION

Cloud migration is the method in which we move data, application and other business related concepts from organization computers to cloud or from one cloud to another cloud. While a cloud migration can shows many challenges and raise security level, but cloud computing can help to company by potentially minimize capital expenditures and operating costs as it provide profit of data portability, platform scalability, high availability, improve accessibility and effective resource allocation, reduce capital cost that cloud-based computing offers to cloud users. The migration of applications to cloud

computing must be done in a systematic manner. Existing enterprise applications must be thoroughly determine which workloads can benefit most from early migration to the cloud. While migration different parameters need to be considered that are costs of migration, application redesign, application performance and availability, security and privacy requirements and regulatory requirements.

1.3 APPLICATION MIGRATION AND CLOUD

Application migration is the process in which legacy application or programs that is not used from long period is moved on new platforms, environment, and infrastructure and makes run able with new technology. If the migration is performed on compatible platform, the application is run directly on it. In the case of the cloud, the application migration is performed from existing data center to the target cloud. The target cloud can be a public, private, or hybrid that is, an environment that transparently combines multiple clouds to perform operation.

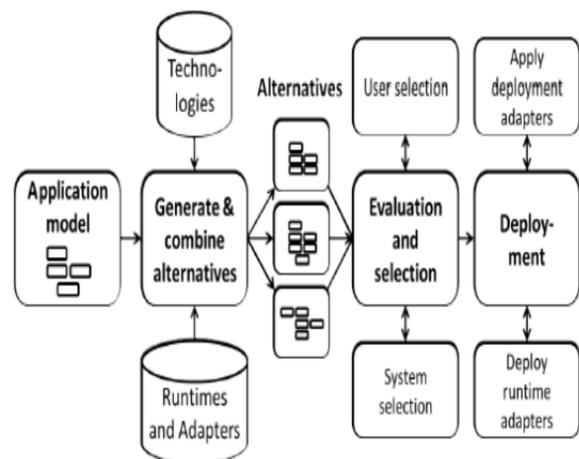


Figure 1: Procedure for Application Migration

1.4 PROPOSED WORK

In the previous base paper, Dynamic compare and balance algorithm is used for optimization that does not consider load at virtual machine allocation time it simply allocates the virtual machine to server and then at predefined time

interval T it checks load of the server. Accordingly to server's overload or under load condition further steps are taken. If the server load is overloaded that is more than the predefined upper threshold value, we have to apply load balancing algorithm for transferring extra load of this host to another host machine. In another case, when host load is less than the predefined lower threshold value. In this case, host is considered as under loaded. So we have to apply server consolidation algorithm for transferring the load of this host to another host machine and make this host switch off to save energy and decrease the services cost of cloud. In both cases virtual machine migration is performed to balance the load but it falls short due to the migrations and more downtime during the migration.

In Proposed algorithm, we will implement and compare one load balancing strategy called orthogonal recursive bisection algorithm to group server nodes into a balanced tree and then migrate resources so to keep the tree balanced. After that we computed the results of Pre Migration and Post Migration in terms of best and worst server virtual machines. We have taken initially 500 virtual machines for migration. We also analyzed the behavior of migrated virtual machines through different parameters like energy consumption, load factor, and total time taken to migrate all resources.

1.5 OBJECTIVE

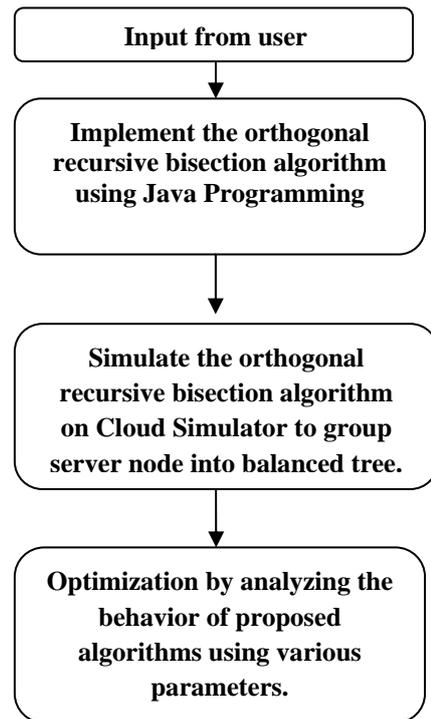
Objectives for this research work are:

- To optimize the performance of cloud system.
- To study the Cloud Simulator toolkit for simulation.
- To implement and simulate the orthogonal recursive bisection algorithm On Cloud Simulator to group server nodes into a balanced tree.
- To Migrate resources to keep the tree balanced.
- To analyse the behavior of the cloud migration algorithm using following parameters :
 - No. of CPU
 - Speed
 - Migration Time
 - Energy consumption
 - Resource Utilization

1.6 METHODOLOGY

Input: - Required parameters for cloud lets and virtual machine are taken from user.

Output: - Improves load balancing at cloud with better response time, data processing time and throughput of the server.



1.7 REQUIREMENTS FOR PROPOSED WORK

- PC with Window XP/Vista/7 (32-bit) Operating System
- Intel Pentium IV Processor
- 512 MB RAM
- 80 GB HDD
- Java 7 SE
- Installing Java Run-time Environment 6 or later
- Cloud Simulator
- IEEE Journals and other International Journals

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