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Providing PaaS Over Private Cloud For Educational System

Rajesh Magar¹, Nitin Pawar², Prof.Suvarna Pawar³

¹ B.E.(I.T), Pune University, India

² B.E.(I.T), Pune University, India

³ H.O.D.(I.T), Pune University, India

Abstract— Now a day's, most of the Educational organizations suffering the problem of budget and academic data maintenance. Purchasing the licensed copy of software for each PC relatively increases budget of organization as well as for maintaining academic data there should be an automated system. In the Traditional PaaS over Cloud ,during processing of request, if the processing server fails then it transfer the request to another server which provide execution of request from starting point thus the traditional system doesn't provide resumption of work facility .The installation of platform on each client PC's which increases the cost of installation and maintenance. In our Proposed PaaS Over Cloud for educational system with load balancing provides open execution platform for users with reduced user waiting time. Platforms get installed on cloud server which can be accessed by Clients at anytime for execution of their program. This system provides resumption of work facility by maintaining buffer at load balancer and also provides small e learning curve that provides educational material for client.

Keywords— PaaS, Private Cloud, Middleware, load balancing, resumption of work, E-learning.

I. INTRODUCTION

The cloud computing is the real time communication network which offers applications and services to its user. The various services provided by cloud can be software, hardware, data storage etc. Now a day's data storage is most widely used in application such as Gmail. Apart from these various applications that provides various cloud facilities are Google App Engine, Appscale, Orangescape, Mendix, Openshift and force.com. The platform they provided are mostly open source and free. These all are providing highly scaled performance for software as a service and cloud data storage. The existing system doesn't consider failure node, In case if a processing server fails then transaction begins from starting which increases the overhead and ultimately degrades the performance of the system so we decided to work on improving the performance of cloud based systems. In improving the performance of existing cloud based system, we are focusing on load balancing so that, the response time can be minimized, resource utilization can be maximum and to achieve higher throughput. We are also focusing on resuming transaction from the point of failure.

Providing execution environment over private cloud using load balancing algorithm provides program execution deals with using platform as a service (PaaS). PaaS with load Balancing is a process of reassigning the total load to the individual nodes of the collective system to make resource utilization effective and to improve the response time of the job, simultaneously removing a condition in which some of the nodes are over loaded while some others are under loaded. Execution Environment over cloud is done using dynamic load balancing which does not consider the previous state or behavior of the system, that is, it depends on the Current state of the system. The system also provides Software as a Service and small E-Learning curve in which all the necessary educational resources such as software, ppt's, pdf's, etc. are kept on the server, which can be accessible by the client. The test Conduction, result evaluation of students and taking feedback from student is also provided. Thus this paper focusing on providing PaaS over cloud with load balancing which reduces user waiting time. and also provides small e-learning curve that helps organizations to save their money.

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Motivation

- The existing PaaS over Cloud System doesn't provide resumption of work facility. If the processing server fails then it transfers the request to another server which provides execution of request from starting point. Thus it degrades the performance of cloud by increasing user response time. Hence in this system we are mainly focuses on resumption of work which reduces user waiting time.

Goals / Objectives

- The goal of providing PaaS over Cloud is to provide open execution platform to the user with reduced response time. And to minimize the installation and maintenance cost of educational organizations as well as reducing the overhead of management of large amount of data.

II. RELATED WORKS

In Cloud Computing there are two main issues where research is required. The first one is performance issues, which focuses on providing quick service to its users. The second branch of research is Security to user data which is stored over cloud because cloud is a shared pool of resources. Customer unaware about where the data are stored, who manage data and other vulnerabilities that can occur. The performance of the cloud computing can be improved by load balancing. The existing load balancing algorithms like Biased Random Sampling, Active Clustering, Join-Idle-Queue etc. doesn't provide resumption of work in case of failure of server or disconnection which increases users overhead.

PaaS provides resources to developer to build their application and services over the internet without installing and downloading software. Developers do not need to worry about the storage or hosting. Developers write the code and execute it on the cloud. The PaaS provider manages patches upgrades and other routine system maintenance. It

facilitates a reliable and scalable development and deployment of applications without the cost and complexity of buying and managing the underlying infrastructure (hardware (server, storage and network), and associated software (operating systems virtualization technology, file system)).cloud platform provide all of the facilities required to support the complete life cycle of building and delivering web applications and services entirely available from the Internet Google App Engine, Appscale, Orangescape, Mendix, Openshift and force.com. The platform they provided are mostly open source and free. The traditional systems works on the principle of pay per use model.

III. IMPLEMENTATION

A. Private Cloud

Private Cloud is the phrase used to describe a cloud computing platform that is implemented within the corporate firewall, under the control of the IT department. A private cloud is designed to offer the same features and benefits of public cloud systems, but removes a number of objections to the cloud computing model including control over enterprise and customer data, worries about security, and issues connected to regulatory compliance. End users interact with the clients to manage information related to the cloud. Datacenter is nothing but a collection of servers hosting different applications. A end user connects to the datacenter to subscribe different applications. Distributed servers are the parts of a cloud which are present throughout the Internet hosting different applications. Virtualization is used to install a software that allow multiple instances of virtual server applications. In distributed System, the processing power is distributed among several systems. But while using the application from the cloud, the user will feel that he is using this

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application from its own machine. Fig.1 shows the general architecture of private cloud.

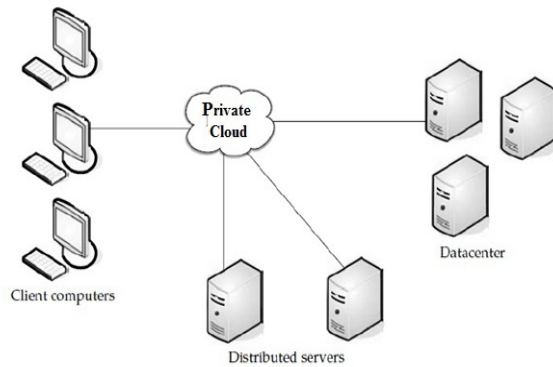


Fig 1:Private cloud

B. PaaS Over Cloud

PaaS Over Cloud provides open execution platform for user for their execution of program. The licensed copy of software is installed on server computer which accessible by client. In this project, we grouped clients into clusters and for each cluster there is one load balancer is present. If the number of clients present in the cluster gets increased then number of server also get increased. The proposed system structure is shown in the fig.2 it consist of four parts. The clients, load balancer, computing servers and walrus

1) Client: The Clients writes their program and sent request for program execution over cloud. The clients can be student, teachers etc.

2) Load balancer: balances the load at server side so to avoid the condition of some server are over loaded and some are under loaded. Load balancer

distributes the collective load to the individual node in such way that provides continuous service to its user with reduced user waiting time.

3) Cloud server: cloud server is computing node where the platform gets installed. Cloud server executes the program and sent the compilation report to the client through network.

4) Walrus: Walrus enables to apply proposed system version. To accommodate the future changes walrus is used. The prototype of changed version is implemented and tested in walrus.

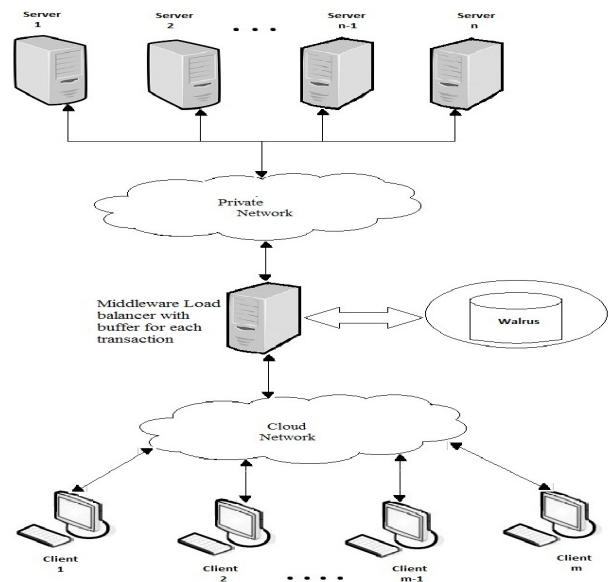


Fig2:PaaS Over Cloud Architecture

The client writes their program in any editor like notepad and sent the program over cloud network for execution. When request came from client computer then load balancer checks is there any existing transaction? If no then it will selects the server allocates the buffer and transaction time and forward request to that server. Once the request is

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processed by processing server, it will send the compilation report to the client computer through network. If there is an existing transaction then the request will be put into the buffer at load balancer. During processing of request if the processing server get fails then whatever work done by that server get stored into buffer and this work is resumed by another server.

IV. CONCLUSIONS

The execution environment over private cloud for educational system with load balancing algorithm provides high performance by providing quick response. It allows to maintain profile for each user to execute their program on cloud, downloading of educational software, pdf's. This leads towards saving of cost for purchasing multiple licensed copies of software and cost of papers. This system also provides taking of feedback, test conduction etc. as the cloud is private hence it also provides data security to its user. This system provides continuous service to its user even if one server node fails the work resumed by another server.

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