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Quality-of-Service Aware Fair Resource Allocation Approach in Fog Computing Based Virtual Machines

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ABSTRACT

Sharing cloud resources between agencies of customers as well as network is a mission. Cloud providers do not usually support users in sharing their spare devoted assets with others. Improvement of computer science and era, utility of network schooling has emerged as more mature. The generation of network useful resource sharing has been promoted via computer systems. In developing international locations, it's miles often too pricey for people to acquire a digital gadget (VM) of their very own. Customers can also, consequently, desire to manipulate prices and increase computational resource usage by using sharing their times with others. This system offers a field primarily based cloud aid sharing (CRS) model for sharing user's computational resources thru a social community. In our technique, we have integrated a prototype users account with the computational cloud in localhost to permit tenants to percentage their unused cloud assets fragment with other customers. The performance of the proposed prototype is evaluated below distinct workloads. Primarily based on our experimental consequences we finish that the proposed model using assignment Scheduling & resource Allocation in VM algorithms is well applicable for the introduction of a low-cost social cloud in growing international locations.

Keywords : Cloud Resource Sharing (CRS) model, Virtual Machine (VM), Customize Cloud computing system in localhost, network, Task Scheduling, Resource Allocation

I. INTRODUCTION

Developing countries face many social and economic challenges. Education is often seen as a key means of reducing the levels of poverty and re-enforcing economic growth in such countries. Unfortunately, due to a lack of funding, governmental and non-profit charitable institutes are not able to provide sufficient learning resources to students. Many institutes have limited access to basic research and development resources. This often significantly compromises the educational progression of students in developing countries. Emerging technologies tend to be expensive, at least initially and therefore may require considerable funding to be put in place before students can even begin to benefit from working with them. Cloud computing is one such technology that requires significant investment. It is increasingly becoming a vital part of the re- search infrastructure in many data-intensive fields. In developing countries specifically in most educational institutes, cloud resources are not commonly made available to students and researchers because of the associated costs. If such countries are to develop and grow, then new ways of providing access to emerging technologies need to be found. This paper focuses on

how cloud resources can be made available to students in developing countries using an existing Facebook account. The major contribution of this paper is to present a container based cloud resource bartering (CRB) model for sharing cloud resources among users in emerging economies. The main aim is to break down several barriers that currently prevent students and small-scale communities from accessing the latest technology in such regions. To solve this problem, we have designed a cloud resource bartering (CRB) model that supports container based resource sharing among users. The proposed CRB model has been implemented and deployed on Facebook. Linux container (LXC) based sharing in EC2 may help the user to share a part of the complete resource with other tenant users. This is likely to also help the landlord users to manage the cost of renting their computational resources.

In this paper, we employ a range of different workloads to test the stability of container-based virtualization which enables the social community to share virtualized containers with each other. In addition to this, we have evaluated the implemented model and examined the stability and performance of shared cloud resources. For this purpose, we installed different workloads in LXC containers created in EC2 instance and observed its stability among a shared community. Our results show satisfactory performance of shared instance under different workloads. A community-based survey was carried out to gather qualitative feedback from real end users of the system. The result of this analysis confirms that social networks can play a vital role in cloud resource bartering and such approaches can work well in developing countries.

The contribution of the paper is twofold; firstly, the CRB creates a trusted community environment on Facebook, where users can share their idle compute resources with others. Secondly, CRB requires the sharer and the tenant to both view and accept the Social service level agreement (SSLA) before sharing. It also keeps a list of SSLA violation details and black list the users who have not followed the terms and conditions mentioned in SSLA. Both of these features have a novelty with respect to sharing resources on a social network according to the understanding of the author. To the best of our knowledge, it is the first effort in this direction.

II. PROBLEM STATEMENT

Resource sharing in the cloud Computing environment is the major issues that limited application of the cloud computing. The research work comprises the issue handling of Resource sharing in the cloud Computing approach for online system and provide the flexible solution or environment for sharing their resources in computational cloud in localhost to enable tenants to share their unused cloud resources fragment with other users.

III. OBJECTIVES

- To clustering shared resources in cloud and its implementation.
- To provide resources on the basis of sharing in cloud computing.
- To implement large scale distributed system with vast resource available and its utilization on internet, and provides services.
- Performance is high.
- Customer satisfaction in solving optimal configuration problem with resource utilization regarding cloud resource sharing on virtual resources.
- Improve the service quality of service provider.

IV. SYSTEM OVERVIEW

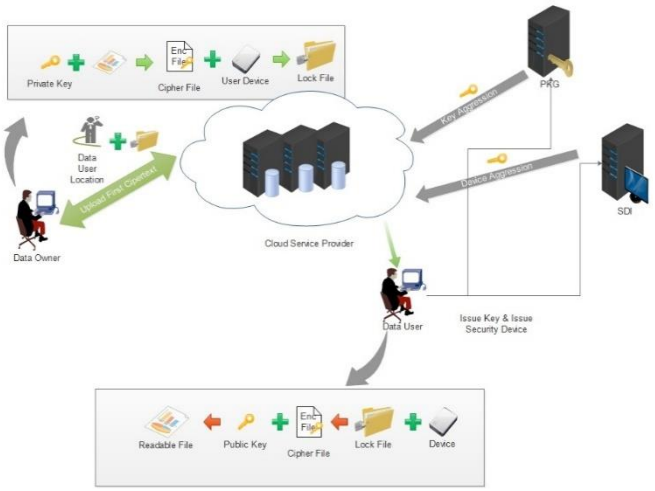

Fig.1: Overview of CRS System

In developing countries, it is often too expensive for people to acquire a virtual machine from public clouds. Users may, therefore, wish to manage costs and increase computational resource usage by sharing the virtual instances with others. This work provides a cloud resource sharing (bartering) platform to help users share their cloud resources through the localhost-based social network, just like they would share other content (files). Based on this idea, this work presents a system to help users to share their dedicated resources without the need for money changing hands in different social communities, in a fair trust-based environment and pay cost as per usage. The results provide a clear confirmation that under different workload conditions, cloud resources can be effectively shared within a social community. This indicates the successful resource sharing using the proposed CRS Model and confirms that the prototype shows great promise in terms of helping users in developing countries access resources which they couldn't otherwise afford. This may help users to save money whilst accessing the latest technology.

V. IMPLIMENTATIONS

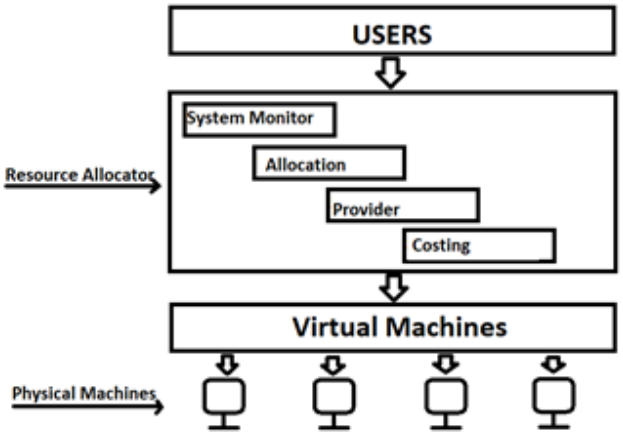

Fig.2: System Architecture

The implemented CRB application is an Active Server Pages (ASP) based web application that provides an interface to users through which they can trade resources. The bartering application is integrated with Facebook to encourage sharing among social community members. A Guacamole web service is embedded within the CRB application to make a remote connection with Amazon EC2. An LXC container is installed in the Amazon EC2 instance to allow users to benefit from container-based virtualization. The following Fig. 4 provides an overview of implemented CRB application. This application keeps a track of complete details of user's trading activities, for this purpose a complete list of resources that a user has shared is maintained. The record of resources acquired by a user from others is also maintained. The CRB application also provides details about Amazon EC2 instance which includes the instance type, RAM, and state of instance whether it is running or terminated. A tenant can access a cloud resource by requesting an account from its owner. Before a tenant can acquire a cloud resource they need to accept a social service level agreement (SSLA). Following this the bartering application establishes a connection with the Amazon remote instance and grants access to the tenant. The owner can share the same instance with multiple friends at the same time with the help of

implemented container-based virtualization (LXC). The user activity manager (UAM) monitors all the behavior of users. It keeps track of all the SSLA's and provides details regarding whether a tenant has fulfilled all the terms and conditions of their SLA's or has violated them. The user activity manager (UAM) thereby helps the user to view the complete status of resource bartering and their respective details.

VI. RESULTS ANALYSIS

The results show that although the performance of a container may decrease due to a heavy workload, it has a very small impact on the other nested instances. The following Fig. 3 gives consolidated results to show that the performance of the host machine stays same no matter how heavily the containers are loaded. It also shows that the containers under stress do not affect the performance of the other containers running on the same host. Hence it can be concluded that the CRB system performed effectively well under different workloads, and demonstrated its feasibility. The results provide evidence that resource sharing between multiple users works effectively after deploying the CRB Model. The environment set up with containers helps to insulate users from each other's workloads. This confirms that resources can be effectively and fairly shared between users through the CRB application.

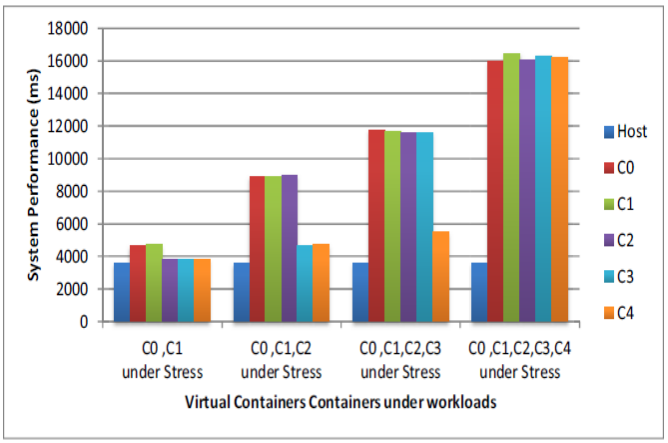

Fig.3 : Systems' performance with reference to nested containers with different workload.

VII. CONCLUSION AND FUTURE SCOPE

Cloud computing is an emerging shared infrastructure. It is automatically formed from a virtual resource pool via the network and a large number of virtual technology available resources. The ability of integration crossing regional and cross database resource is breaking the distributed data resources. It would cause the imbalance information but in another hand it also improves the effective of circulation and utilization of resources. This paper summarizes the study of distance education at home and abroad on the basis of resource sharing with the open source IaaS project and OpenStack to propose a model base on cloud computing to making a distance education resources sharing system. The model was finished at all levels of design and implementation.:

VIII. REFERENCES

[1]. Ashima, Vikramjit singh, "A novel approach of job allocation using multiple parameters in cloud environment" in International Journal of Computer Technology Jan 2017.

[2]. Mayanka Katyal, Atul Mishra, "A Comparative Study of Load Balancing Algorithms in Cloud Computing Environment" International Journal of Distributed and Cloud Computing Dec. 2013.

[3]. Sheenam Kamboj, Mr. Navtej Singh Ghumman, "An Implementation of Load

[4]. Balancing Algorithm in Cloud Environment" In International Journal of Computer Technology, July 2016

[5]. Zahra Ali, Raihan ur Rasool, Peter Bloodsworth, "Social Networking for Sharing Cloud Resources". 2012 Second International Conference on Cloud and Green Computing.

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