



ARCHITECTURAL FRAMEWORK FOR VIRTUAL COMPUTING LAB

Guided By: Prof. Sukhada Bhingarkar

Group Members

Name of Student	Examination Seat No.
Vishal Gaurav	B80384230
Aniket Trivedi	B80384205
Amit Pandit	B80384239
Nishant Gupta	B80384273

ABSTRACT: In private cloud computing, we need to make sure that large number of computing resources are available on demand, however in current architectures like eucalyptus, there is a single server or cluster controller (CC) which is a sole provider of virtual machines to the users. Using eucalyptus, we can build a private cloud, through which an educational organization can build a virtual computing lab that can satisfy the requirements of an organization. But, due to extensive use of computational resources, cluster controller component of eucalyptus becomes a bottleneck, hampering performance. Also, we have studied different drawbacks associated with different architectures. The proposed architecture overcomes the most drawbacks. This architecture for virtual cloud computing is based on a master –slave concept where one master and multiple slaves serve the resources to the clients. This approach improves the performance of the server and would allow cloud servers to extend their computation power by dynamic resource discovery over the network. It allows new clients to request virtual machines, and the server makes the choice of running the requested virtual machine either on previously available slaves, or on the clients who are recently registered into a set of slaves. Along with this dynamically growing architecture, we have also implemented an algorithm used to schedule the requests coming

from different clients based on the priority which are calculated through various parameters. Using this algorithm, our architecture resolves various problems, race in conditions and priority requests. Thus, this architecture reduces the probability of occurrence of network bottlenecks and ensures that sufficient resources are always available to the end users, thus implementing the concept “Cloud never dies”.

PLATFORM / TECHNOLOGY:

Hardware Requirements

For developing the architecture the following are the Hardware Requirements:

Recommended (Master)

Server : 64 bit Ubuntu 9.10 with VT enabled

RAM : 4 GB DDR2

Recommended (Client)

Server : 32/64 bit Ubuntu 9.10 with VT enabled

RAM : 2 GB DDR2

Software requirements

For developing the architecture the following are the Software Requirements:

Operating System: Linux/Ubuntu 9.10 (Karmic)

Language : Python

Database : MySQL

BENEFITS:

- Cloud can be created using existing architecture therefore saving need for buying the new one



- Various virtual machine instances will be there so that the teacher can provide different instances to the students according to their need
- Own storage space for stakeholders of college so that teachers, staff, students can save their data on their respective spaces and can resume later
- Pen drives can't be detected so least possibility of cheating
- No virus problem since virus will be present for that instance only and will die as soon as that instance is closed.
- No misuse of Internet since the college can define limited bandwidth for the instances

FUTURE WORK:

1. Automatic management for registration and allocation of computational resources to cloud users can be implemented and a work to be done to reduce time required for launching an instance for new request thus improving the performance.
2. This architecture can be successfully used rather than existing open cloud platforms thus avoiding their drawbacks and can be implemented in colleges, educational institutes to set up Virtual Computing Labs.

PUBLICATION:

1. Amit Pandit, Vishal Gaurav, Aniket Trivedi, Nishant Gupta, Prof. Sukhada Bhingarkar, Prof. Bharati Ainapure, "Para-Scheduling Algorithm for Architectural Framework of Virtual Computing Lab", *International Journal of Research in Computer and Communication Technology (IJRCCT)*, Vol 3, Issue 3, March 2014.

ACHIEVEMENTS:

Sr. No.	Name of Event	Type (Poster / Demo / Paper Presentation)	Name of College	Award/ Participation
1	Avishkar 2013	Poster	SITS,Narhe	Participation