Multi-Language Compiler on Private Cloud Based System

Amit Khaparde, Sachin Lonare, Swapnil Bapat, Rutuja Paripagar, Roshani Channe

Abstract— Cloud Computing is an attractive concept in IT field, that relies on sharing computing resources rather than having local servers or personal devices to handle applications. Using cloud computing resources to be is provide according to the user needs can share the resources, device and software. Private cloud services are very expensive so normal user cannot buy them are use that application for experimental. So we are developing such application that normal user can buy them and experiment on that product. We implementing such product by using the Open sources software such Ubuntu 10.04 operating system. By using that student and normal users can also use an experiment on that product.

Eucalyptus an open source system has been used to implement a private cloud using the hardware and software.

I. INTRODUCTION

Computing has seen changes over decades. Cloud computing wields applications through the internet, which can be reached using a Web browser, while the business pertaining software's and data are stored on servers at a totally remote location. From mainframe computing to client-server model, it has cleverly picked up similarities from autonomic computing, grid computing, utility computing and many more which have been the major contributors of this master mind. All are tested on private networks and very few on internets, to a small scale, but cloud computing has based itself primarily on Internet. In fact, the cloud is a metaphor for Internet. Cloud computing can be used for the applications on the Internet that store and delivering a service, anything including email, automation and tax works.

Cloud Computing is an attractive concept in IT field, that relies on sharing computing resources rather than having local servers or personal devices to handle applications. Using cloud computing resources to be is provide according to the user needs can share the resources, device and software. Private cloud services are very expensive so normal user cannot buy them are use that application for experimental purpose.

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We have three types of services available in this cloud computing:

1. SaaS (Software as a Service).
2. PaaS (Platform as a Service).
3. IaaS (Infrastructure as a Service).

SaaS

Software as a Service (SaaS) tenders an application to user absolutely on On-Demand basis. Only one instance of the software runs on the cloud and the cloud caters to multiple users or clients i.e. users and applications [1].

PaaS

Platform as a Service (PaaS) has software's which can act as a platform for development of higher level services. That platform may encompass middleware, applications, OS and environment to develop those services. Also the platform can be programmed with help of APIs. These platforms are really capable of handling user applications [1].

IaaS

Infrastructure as a Service (IaaS) includes fundamental necessities like storage, computing resources etc. on the network. Routers, switches, servers, memory etc. are made available on network to IT architects to own whole infrastructure without actually installing all those physically [1].

We are design the common editor that user can write a program on that editor and run it the program write at client Side but it will compile and run on particular sever side. We also implement one cloud controller and other are sub sever every language has it special sever for that language.

II. EUCALYPTUS
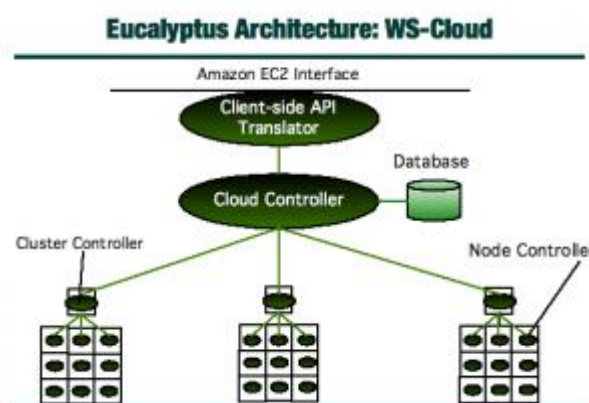
An open source cloud computing and Infrastructure-as-a-Service (IaaS) platform for enabling private clouds. Eucalyptus takes a company's existing IT infrastructure and adds a virtualization software layer with scalable, secure Web services that work together to create elastic pools with the ability to dynamically scale depending on the company's needs. Eucalyptus also offers an Infrastructure-as-a-Service

product in partnership with Amazon that delivers full compatibility with Amazon's Web Services APIs, enabling support for Amazon's AWS EC2, S3, EBS, AMI and I AM services. This makes it possible to efficiently extend a Eucalyptus private cloud to a hybrid [4].

III. AMAZON AWS COMPATIBILITY

Amazon Web Services (abbreviated AWS) is a collection of remote computing services (also called web services) that together make up a cloud computing platform.

API compatibility layer is built on top of Eucalyptus that explores the functionality in terms of Amazon's API. Amazon tools, infrastructure and other work that someone put into building for Amazon would also be compatible with Eucalyptus inside the datacenter. In Fig.1 we can see various components of Amazon and Eucalyptus. The EC2 (Elastic Compute) component of Amazon which handles the provisioning of virtual machine and its resources are replaced here with cloud controller similarly Amazon provides storage mechanism EBS (Elastic Block Storage) which provides block storage devices to virtual machines are replaced by Storage Controller and S3 (Simple Storage System) simple object based get put mechanism, here it is implemented as walrus [4].

IV. 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.

Private cloud implementation aims to avoid many of the objections regarding cloud computing security. Because a private cloud setup is implemented safely within the corporate firewall, a private cloud provides more control over the company's data, and it ensures security, albeit with greater potential risk for data loss due to natural disaster [4].

V. INSTALLATION OF PRIVATE CLOUD:

Setup server 1 [2]

1. Insert Ubuntu 10.04 server edition cd
2. Select „Install Ubuntu enterprise cloud"
3. Configure the network: select configure network manually Address 192.168.0.221 gateway192.168.0.1 Net mask 255.255.255.0Name server 121.242.xxx.xxx
4. Host name for this system: cc
5. Cloud controller address: leave it blank
6. Cloud installation mode: Select following Cloud controller, Walrus storage service, Cluster controller, Storage controller
7. Partition disks select „Guided-use entries disk and set up LVM"
8. Full name for new user and username for account:cladmin
9. Select no automatic updates
10. Eucalyptus cluster name: cluster1

11. Pool of IP addresses that can be dynamically assigned as public IP"s of virtual machines: 192.168.0.70-192.168.0.80
12. Install grub boot loader to master boot loader: **yes**

Also install KVM on server1 which helps to install images and bundle them.

$ sudo apt-get install qemu-kvm [3].

Setup server 2 [2]

1. Insert ubuntu 10.04 server edition cd
2. select „Install ubuntu enterprise cloud"
3.Configure the network: select configure network manually"
Address 192.168.0.222
Gateway 192.168.0.221 (IP of cloud controller)
netmask 255.255.255.0
nameserver 121.242.xxx.xxx Here Cloud controller is detected automatically
4. Host name for this system: nc
5. Cloud installation mode: Node controller
6. Partition disks select Guided-use entire disk and set up LVM"
7. Full name for new user and username for account: cladmin
8. Select no automatic updates
9. Install grub boot loader to master boot loader: yes

Setup Client [7]

The purpose of Client1 machine is to interact with the cloud setup, for bundling and registering new Eucalyptus Machine Images (EMI).

1. Boot the Desktop off the Ubuntu Desktop 10.04 CD and install. The Desktop will be on the enterprise network and will obtain an IP address through DHCP.
2. Install KVM to help us to install images on KVM platform and bundle them:
$apt_get install qemu_kvm. [3]

Exchange of Public SSH Keys

On node controller set a temporary password
$ sudo passwd eucalyptus On cloud controller
$ sudo -u eucalyptus ssh-copy-id -i /var/ lib/ eucalyptus /.ssh /id_rsa.pub eucalyptus@192.168.0.222
On node controller remove temporary password
$ sudo passwd -d eucalyptu.

Installing Compliers:

On the cloud side install compliers at the sever 1/cloud controller [6]

    1.install c++ compliers
    $ sudo apt-get install buid-essentials.
    $ sudo apt-get install gedit.
    2.install java compliers on node controllers sever 2.
    $sudo add-apt-repository "deb http:// archive. canonical . com/ lucid partner" .
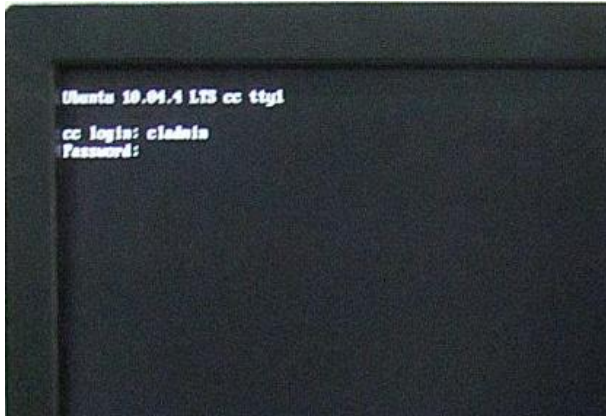   3.Update the source list
    $ sudo apt-get update.
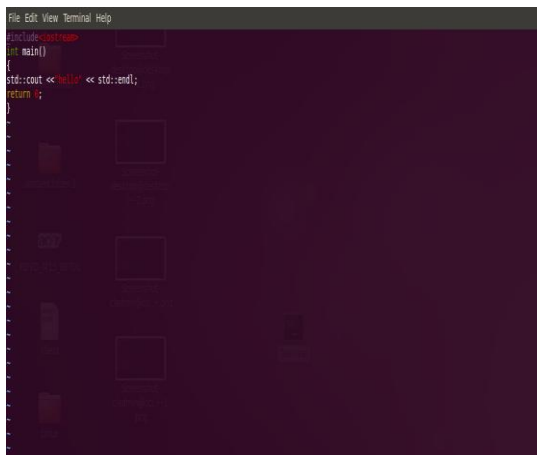   4. Now install sun java packages using the following commands
    $ sudo apt-get install sun-java6-jre sun-java6-plugin sun-java6-fonts
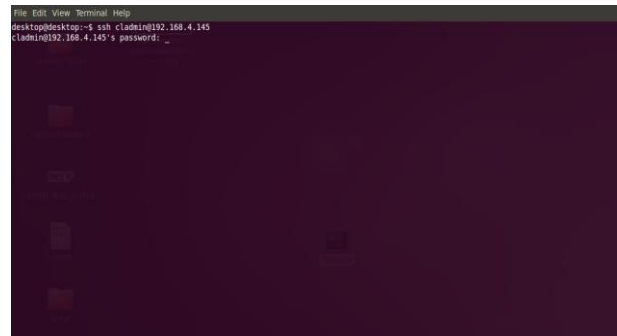
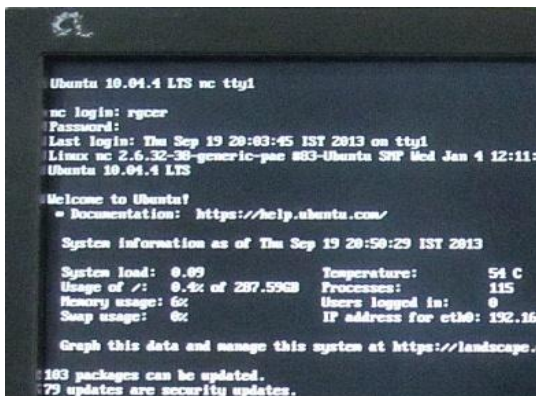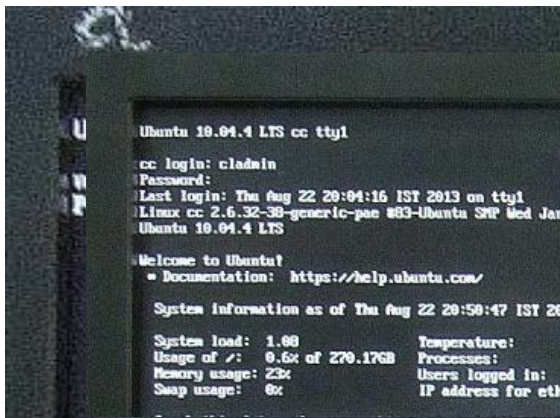## VI. ACCESSING THE COMPILERS:

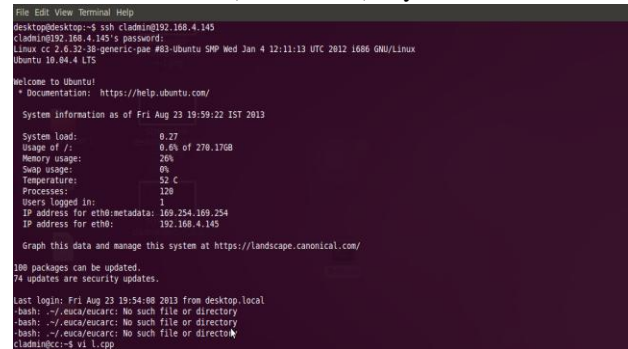Client side access the cloud compliers from the node controller.
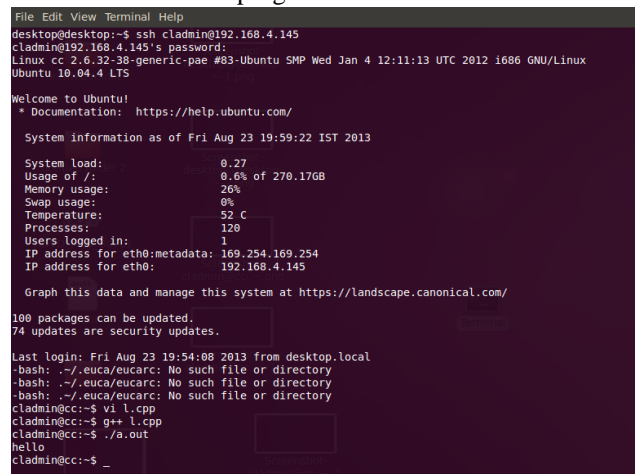
1. Log in to Cloud Controller

2. log in to node controller

Accessing the cloud from the client side by using
3. SSH(secure shell) key command .

5.Write a c++ program in VI-EDITOR in client side

6.Compile and Run Program on cloud side .

VII. FUTURE SCOPE

1. We will be design the Common Editor which can be used to write a program.
2. We will try to Create Interface which will allows two or more different platform based system to communicate with cloud server.
3. We will also try to create login server and its sub-servers for installing compilers.

VIII. CONCLUSION

In these we have successfully installed the Cluster. Where we installed two Servers and a Desktop. Where Server1 acts as Cloud Controller, Server2 acts as a Node Controller, and Desktop acts as a Client. We have Created Interface between a Cloud, Node Controller and the Desktop. Where we can access server 1 from server2 as well as Desktop. We also installed the Compiler and services required on Cloud Controller. We can write, compile as well as store the

program in cloud controller using Desktop and Node Controller.

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