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Cloud: Virtual lab for storage and retrieval of large data by private cloud

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ABSTRACT

Cloud Storage is the attractive concept in information which allows people to provide information as per the need. Cloud provides the services on VM whereby user can share resources, software, platform, security and the most powerful memory storage. Cloud services are supported by Open Source Systems, so make a cloud for storage becomes useful. The project idea is about to provide cloud storage to store and upload the data for teachers, principal and student as study material, Assignments and other stuff by making virtual lab. These drives also allow to the principal and Examination cell authorities to upload the current notices for student. The different types of applications are deployed for students to use the software. One main cloud server is going to store all the types of data which 24*7 available further for the valid user. The Drive facilitates staff with a separate and limited space to store and upload data with its own access privileges. Whole data can be accessed outside the institute also through the internet

Keywords— Internet, private cloud, open nebula, open stack, intranet, cloud server

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I. INTRODUCTION

A. These features of cloud computing can be used within the day to day environment such as IT Infrastructures, colleges, small organization, government institutes. By taking example of the college set up, the cloud can be formed for such a institutes to secure the data and to form a private cloud. Particularly if college is concerned, to set up of a private cloud in a cluster based environment using open source technologies like Eucalyptus, open nebula, open stack etc.College consists of various department like computer, mechanical, electronic,

electrical etc. Each department has different computer labs like language lab, server lab, and experimental

lab. Each branch requires different software, which are purchased by the college which needs to be installed on every computer of different labs according to the requirement of department.

Cloud computing relies on sharing of resources to achieve coherence and economies of scale similar to a utility over a network. Using the cloud storage, user can store their data on the cloud without worrying of data storage and maintenance. When user stores their data on the cloud, it provides relief of burden for storage management, universal data access with location independence and avoidance of capital expenditure on hardware and software and personal maintenance. It provides services and high-quality

The name cloud Infrastructure is used as name because the structure of the network looks same like a exact cloud. Ubuntu Cloud Infrastructure is an OpenStack based ready to deploy Infrastructure-as-a-Service (IAAS). Ubuntu cloud infrastructure can be used to cloud in a easiest compare to other platform and can deploy both public and private cloud smoothly. It can be deployed locally on one system as a cloud server and on more than one system as well. Ubuntu Cloud Infrastructure is one of the easiest way for forming the private cloud to deploy a cloud based on openstack. Ubuntu Cloud Infrastructure is ready to deploy Infrastructures a-Service (IAAS) based on the OpenStack cloud platform.

Installing MAAS from packages by ubuntu is thankfully straightforward. There are actually several packages that go

into making up a working MAAS install, but many of packages are already have been gathered into a virtual package called 'MaaS' which will install necessary components for a 'seed cloud', that is a single server that will directly control and manage the group of nodes. The main packages are:

- maas - seed cloud setup-
which includes both region controller and the cluster controller below.
- maas-region-controller-
Includes the web UI, API and database.
- maas-cluster-controller –
controls a group ("cluster") of nodes including DHCP management.
- maas-dhcp/maas-dns –
Required when managing dhcp/dns.

If any need to separate these services of cloud or want to deploy an additional cluster controller, should install the corresponding packages individually for more background on how a typical hardware setup is arranged.

There are two suggested additional packages 'maas-dhcp' and 'maas-dns'. These set up MAAS-controlled DHCP and DNS services which greatly simplify deployment if running a typical setup where the MAAS controller can run the network.

MaaS seed cloud (config) setup, which includes both region controller and cluster controller below

- maas-region-controller - web UI, API and database.
- maas-cluster-controller - controls group clusters of nodes including DHCP management.
- maas-dhcp/maas-dns - required when managing DHCP/DNS

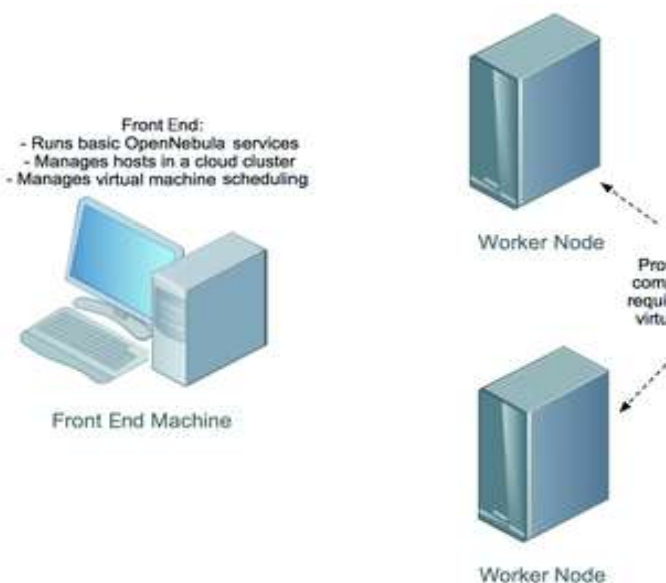


Fig 3: Cloud server deployment

For installation of MAAS with DHCP and DNS:

At the command line, type:

```
$ sudo apt-get install maas maas-dhcp maas-dns
```

To install Juju, need to have the latest juju core package from PPA, following commands can be used to load package:

```
sudo add-apt-repository ppa:juju/stable
```

```
sudo apt-get update && sudo apt-get install juju-core
```

Deploying from the juju Charm:

When Juju is going is going to deploy charms by fetching them directly from the charm store. This ensures that, up to date version of the charm and "everything just works".

To deploy a charm

```
juju deploy mysql
```

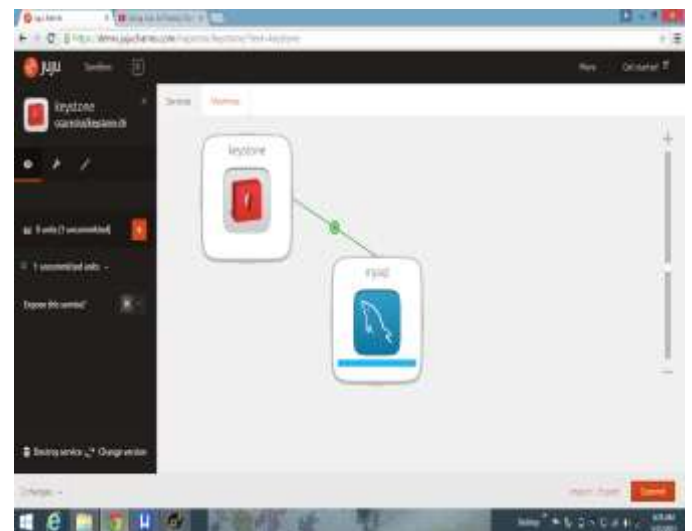


Fig 4: Deploying nodes by Juju

In this way we have seen installation and configuration of private cloud by MAAS and JUJU, open source platform.

V. CONCLUSION

Cloud computing is environment where data is shared among the number of users where security increases and data storage capacity is increasing. Set up of a private cloud in a cluster based environment using open source technologies like MAAS and Juju. The virtual machine images are available in the cloud and upon user request; its instances are created and run in cloud. Services were included successfully and made available to the user. The future scope of this project will be like to update the

software and platform. Various parameters of a college can be kept centrally like software, time table etc

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