Cloud based IT Infra with Central Identity

Phase II – Project Report

Project Guide

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Abstract

The main objective of "Cloud based IT Infra with Central Identity" Phase II is provide the implementation to our objectives.

Implementing the Web based central identity, network based central identity, achieve the combination and deploy all these in the private cloud

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Chapter 1

Introduction

1.1 Introduction

"Cloud Based IT Infra with Central Identity" is a complete solution, based on private cloud to enhance and effiecient utilization the IT Infrastructure of an emerging Universities and Organizations with Central Identity for all its users to access its services.

It is going to be developed in 3 phases

- *Private cloud*

- *Deploying Network Services*

- *Central Identity*

1.1.1 Private Cloud

Private Cloud establishment is targeted for hardware resource pooling, providing high computational and scalable virtual machines for deploying network based applications (smtp, proxy, ftp), web application and Network storage.

1.1.2 Deploying Network Services

Configuration of Uniform hardware experience over the complete university includes single sign on on every device, configuration of mail servers etc.

1.1.3 Central Identity

Essential part that combines normal network services(proxy, mail, etc.) and organizational web & native applications. In addtion to that this central identity is available to thrid party developers as API with dynamic based role user authentication protocols.

Chapter 2

Phase I Work

As part of Phase I, we have done literature survey and anlyzed feasability of the several components

2.1 Components

- Central Identity

  - Single Sign-On with REST API
  - Identity Management
  - Dynamic Role Based Access Control

- Network Based Central Identity

  - LDAP Servers
  - NFS Servers

- Cloud Computing

  - Cloud Characterstics
  - Service Models
  - Deployment Models

- Private Clouds

  - Introduction
  - Open Source Tools

Chapter 3

Phase II Work

As part of Phase II, we have tried to implement some of the above mention components

3.1 Components

- Web based Signle Sign On
  - OAuth Provider
  - University Users Profiles
  - REST API
  - Support of assigin roles to users with their permission set
  - Testing oauth client library in PHP using php-curl

- Network Components
  - LDAP Server
  - NFS Server
  - Haproxy
  - GlusterFS
  - XtreemFS

- Private Infrastructure Cloud
  - Openstack Architecture
  - Installation
  - Virtual Machines

Chapter 4

Private Infrastructure Cloud

To support this central identity both the network and web network central identity we
want to go for the private cloud deployment it includes creating the Private Infrastructure
Cloud with openstack and creating Virtual Machines for instaling these services and assign
them the IP address.

4.1   Openstack Architecture

Openstack is a cloud operating system that provides the 3 main services for the Infras-
tructure clouds namely Stoage, Compute, Networking and some other components are
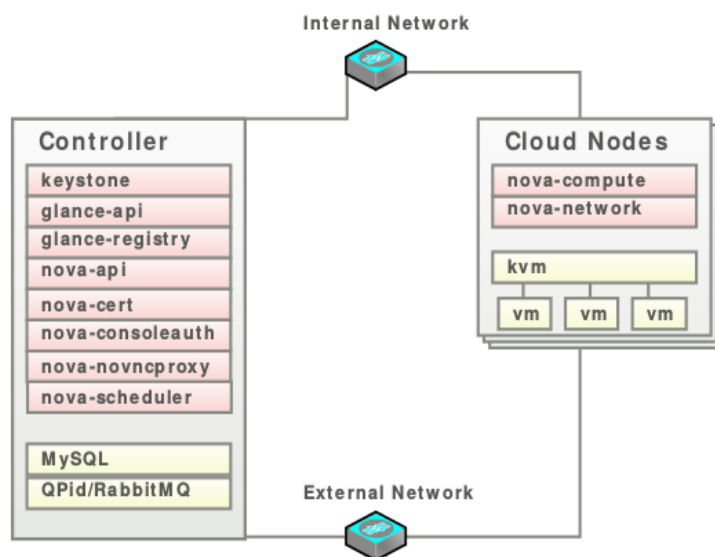can be added later as addons

Figure 4.1:   Openstack Architecture.

4.2 Installation

Installing openstack includes component wise installation namely NTP, MySQL, Rabbitmq-Server, Keystone, Nova, Cinder, Glance, Neutron

4.2.1 NTP

apt-get install ntp

4.2.2 MySQL

apt-get install mysql-server

4.2.3 Rabbitmq-server

apt-get install rabbitmq-server

4.2.4 Keystone

apt-get install keystone

4.2.5 Glance

apt-get install glance python-glanceclient

4.2.6 Nova

apt-get install nova-api nova-cert nova-conductor nova-consoleauth nova-novncproxy nova-scheduler python-novaclient

4.2.7 Neutron

apt-get install neutron-server neutron-plugin-ml2

4.3 Virtual Machines

This Virtual Machines are created from the resource pool after successfull installation openstack
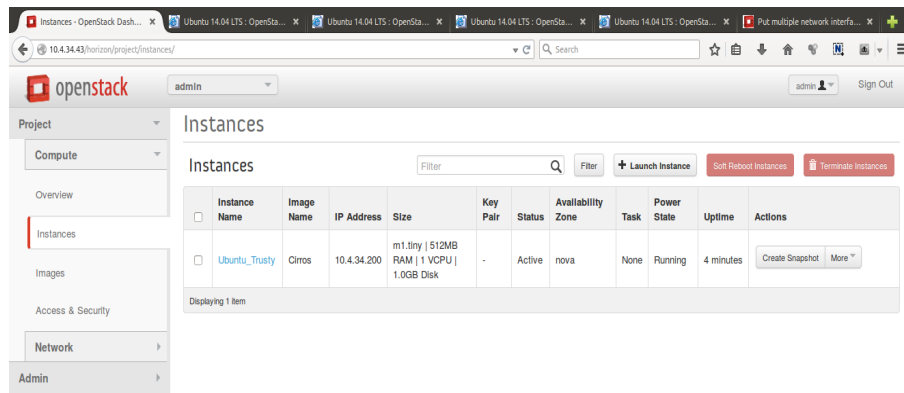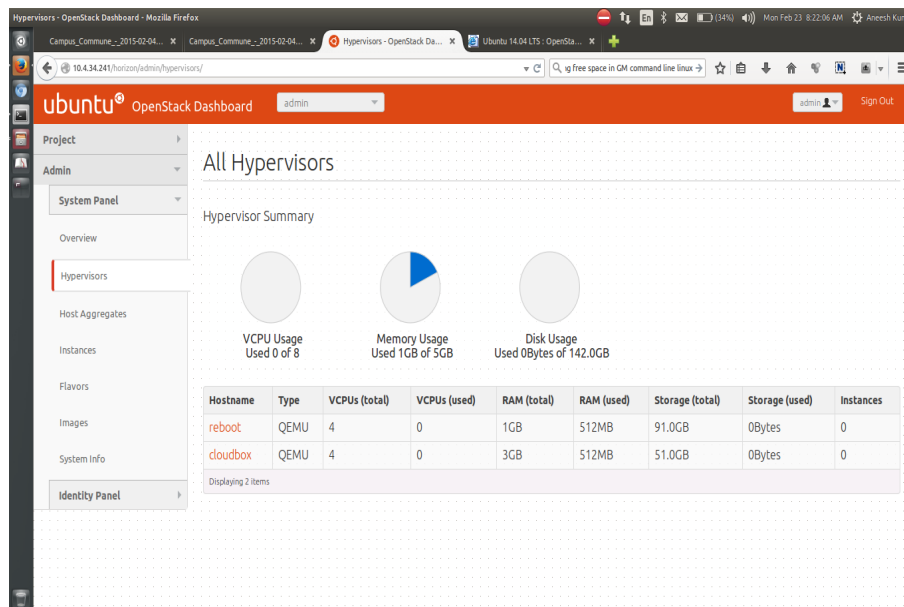

Figure 4.2:   Openstack Virtual Machines.

Figure 4.3:   Openstack Resource Pool.

Chapter 5

Conclusion & Future Work

Chapter 6

References