



LP2 Mini Project Report

OpenStack deployed in

Virtual Machine

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Professor Guide

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Title:

OpenStack

Problem Statement:

Develop OpenStack Environment and deploy in virtual machine

Objective:

To develop a Portal for:

1. OpenStack

Outcome:

On Successful completion of the project students were able to learn Cloud Computing deployment and got acquainted with technologies like Openstack and Ubuntu.

Technologies:

1. OpenStack

OpenStack is a free, open standard cloud computing platform. It is mostly deployed as infrastructure-as-a-service in both public and private clouds where virtual servers and other resources are made available to users

Features of OpenStack used:

Compatibility and portability. Aside from its open source nature, OpenStack has a number of advantages for cloud users. For starters, OpenStack is agile and easy to deploy; it supports both private and public clouds, but often companies choose it to build the former. OpenStack APIs are compatible with Amazon Web Services, so users don't need to rewrite applications for AWS. This compatibility also allows applications and storage to transit between private clouds and public cloud providers.

Security. One of the biggest roadblocks for cloud adoption -- no matter the service provider -- remains security concerns. To calm those companies' worries, OpenStack's robust security system supports multiple forms of identification.

Management and visibility. The open source cloud's Horizon dashboard gives administrators an overview of their cloud environment -- including resources and instance pools.

Cloud storage. OpenStack offers unlimited storage pools and supports block-IO from a variety of vendors, as well as object file storage. Its built-in storage management automatically recovers failed drives or nodes.

Replication and erasure coding with [Ceph](#) provides strong data integrity. To avoid the effects of drive failures, users can take advantage of pre-emptive drive checking. Additionally, OpenStack's scaling capabilities enable users to add servers and storage elastically.

As the need to tackle big data in the cloud rises, OpenStack's flexibility is an added bonus. Users can run Hadoop apps and Web pages for big data analytics, media files and standard block-IO.

Quality control. Because its code base is evolving, OpenStack's release process is broken down into blocks -- roughly four to six months apart. This ensures quality control and release stabilization. The current stable release is Icehouse, but a recent Juno release is a likely replacement.

2. Virtualization

Virtualization is the "creation of a virtual (rather than actual) version of something, such as a server, a desktop, a storage device, an operating system or network resources".

In other words, Virtualization is a technique, which allows to share a single physical instance of a resource or an application among multiple customers and organizations. It does by assigning a logical name to a physical storage and providing a pointer to that physical resource when demanded.

3. UBUNTU

Ubuntu is a Linux distribution based on Debian and composed mostly of free and open-source software. Ubuntu is officially released in three editions: Desktop, Server, and Core for Internet of things devices and robots. All the editions can run on the computer alone, or in a virtual machine.

STEPS:

1. `sudo apt-get update`
2. `sudo apt-get upgrade`
3. `sudo apt-get install git`
4. `git clone https://opendev.org/openstack/devstack`
5. `ls`
6. `cd devstack/`
7. Now type `./stack.sh`

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Output:

The image displays three sequential screenshots of the OpenStack dashboard interface, demonstrating the initial setup and management steps.

Top Screenshot: Login Page
The login page features the OpenStack logo and a "Log in" section with the following fields:

- Domain:
- User Name:
- Password:

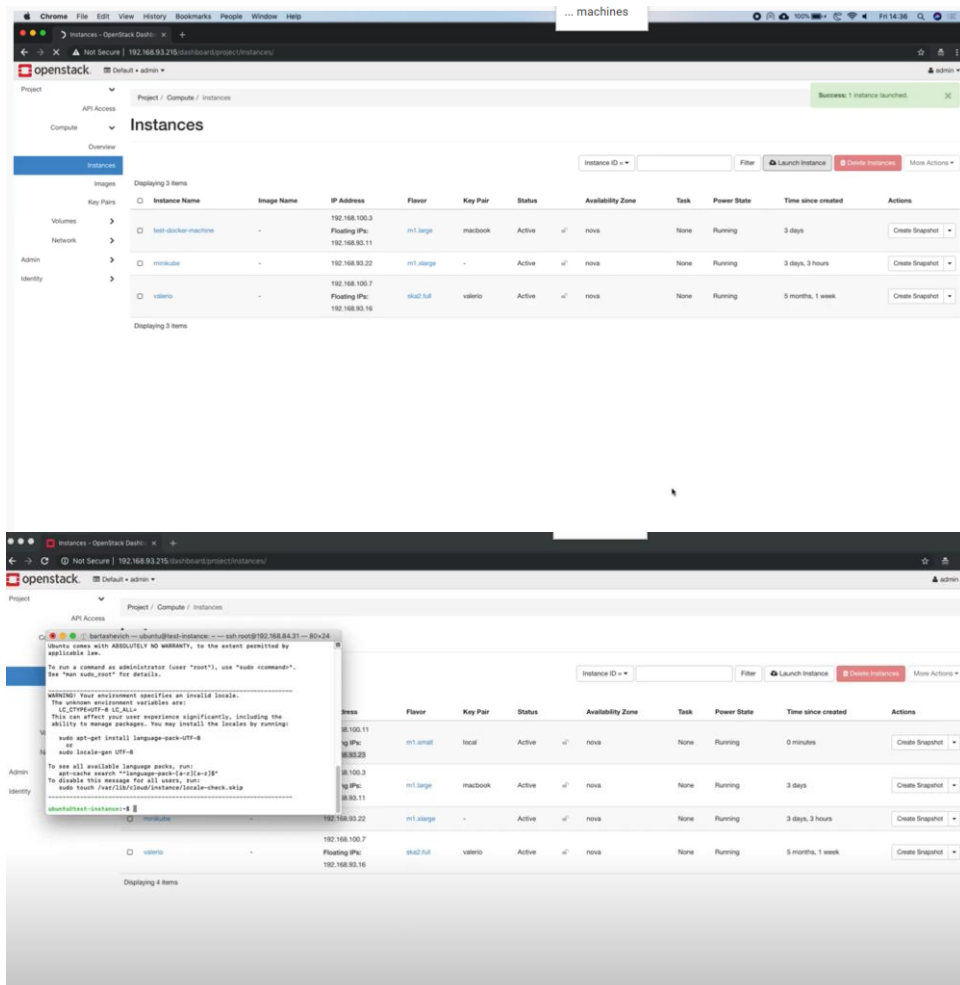
A "Connect" button is located at the bottom of the login form.

Middle Screenshot: Projects Page
The "Projects" page shows a list of projects with the following columns: Name, Description, Project ID, Domain Name, Enabled, and Actions. The table contains five entries:

Name	Description	Project ID	Domain Name	Enabled	Actions
admin	Bootstrap project for initializing the cloud.	1462ee34f0984639a4e03205a85a840	Default	Yes	Manage Members
horizon		448f956756a03a03a0b4b402736c163	Default	Yes	Manage Members
service	Service Project	7ed7961d01e4433869472a1a5a6583	Default	Yes	Manage Members
gnoll		84624b0d874c43236c7d5250689582	Default	Yes	Manage Members
monitoring		dbef6c0b2960493d0a0b48278490735	Default	Yes	Manage Members

Bottom Screenshot: Launch Instance Dialog
The "Launch Instance" dialog box is shown, detailing the configuration for a new instance. It includes the following sections:

- Details:** Includes fields for "Source" (set to "test"), "Flavor" (set to "m1.xlarge"), "Networks" (set to "nova"), "Network Ports", "Security Groups", "Key Pair", "Configuration", "Server Groups", "Scheduler Hints", and "Metadata".
- Availability Zone:** Set to "nova".
- Count:** Set to "1".
- Usage:** A circular progress indicator shows "0% Total Instances (1000 Max)" with "3 Current Usage" (1 Adopted, 996 Remaining).
- Buttons:** "Cancel", "Back", "Next", and "Launch Instance".



Conclusion:

Through this project we successfully learned various concepts OpenStack and Cloud Computing and Virtual Machine