IIT KHARAGPUR

NPTEL ONLINE
CERTIFICATION COURSES

CLOUD COMPUTING

Private Cloud Implementation using OpenStack

PROF. SOUMYA K. GHOSH

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

IIT KHARAGPUR

NPTEL

Overview

- *Meghamala @IITKgp* on OpenStack Cloud
- VM Creation
- Accessing VM by User
- VM Termination

NPT

Meghamala

the IIT Kharagpur Cloud

Home | Services | Team | FAQ | Contact

Meghamala - a one stop solution to your computational needs.

The IIT Kharagpur cloud gives you compute and storage with one click.

Know more

NPTEL

Welcome to Meghamala!

Meghamala is an initiative by the Indian Institute of Technology, Kharagpur to provide on demand computational and storage resources to the institute research community. It is built using OpenStack Cloud Computing platform.

Meghamala has been set up in the Computer and Informatics Centre, IIT Kharagpur. The hardware of the system includes :

- Blade servers
- SAN Storage
- NAS

Please visit the various sections of this website to know more about Meghamala.

Latest News

MAR 23, 2016

MegHadoop

MegHadoop, a Hadoop cluster on Meghamala is up and available for use.

AUG 12, 2015

MeghaData

MeghaData, a data storage service is under beta testing.

APR 25, 2015

Inauguration

Inauguration and Workshop on Meghamala was carried out on 30th April 2015.

Services offered by Meghamala

Meghamala was conceptualized to address the computational needs of the research community at IIT Kharagpur.

To meet these demands, Meghamala offers the following services :

- **VMs4U -- Compute Nodes**
  Provision a virtual machine on demand and use it as a dekstop or run your workload on it. The following virtual machine configurations are available :
  - **IITKGP_regular**
    2 VCPUs
    4 GB RAM
    45 GB ephemeral storage
  - **IITKGP_large**
    4 VCPUs
    8 GB RAM
    45 GB ephemeral storage
  - **IITKGP_xLarge**
    8 VCPUs
    16 GB RAM
    60 GB ephemeral storage

  The virtual machines can have the following guest operating systems.
  - Ubuntu 14.04
  - Centos 7
  - Fedora 20
- **Storage on the House**
  - Persistent storage provided on request

  Click here to request for a VM
- **MegHadooop**

Latest News

MAR 23, 2016
MegHadoop
MegHadoop, a Hadoop cluster on Meghamala is up and available for use.

AUG 12, 2015
MeghaData
MeghaData, a data storage service is under beta testing.

APR 25, 2015
Inauguration
Inauguration and Workshop on Meghamala was carried out on 30th April 2015.

MAR 17, 2015
Installation Complete
Hardware and software installed. Testing in progress.

MAR 13, 2015
GUI on Meghamala
VM images with GUI have been created on Meghamala.

NPTEL

VMs4U - Request form

Name of faculty

Department

Designation

Phone/Mobile no.

E-mail

Purpose

Preferred VM Name

VM Type IITKGP_regular IITKGP_large IITKGP_xlarge

Number of VMs 1

Operating system Ubuntu 14.04

Persistent storage of 20 GB required Yes No

VM required till (max 60 days)

knyq5g

Enter the code above here

Can't read the image? click here to refresh

Please note that the VMs should be used only for academic purposes. Neither the Meghamala team nor IIT Kharagpur is responsible for the contents of your VMs. It is important to highlight that the presence of inappropriate material may lead to immediate termination of the VM(s).

Submit Query

Steps to follow

Fill out this form.
Fill out the form on the left and click on Submit.

Get hard copy signed.
Print the generated PDF and sign it. You may save a copy for future reference.

Submit signed hard copy.
Submit the signed hard copy to the professor-in-charge, Meghamala.

NPTEL

Meghamala team

- **Students**

  Current Members
  - Shubham Jain, 4th year Dual Degree (Computer Science and Engineering)
  - Shreyans Pagariya, 4th year Dual Degree (Computer Science and Engineering)
  - Arindam Roy, PhD Scholar (Advanced Technology Development Center)
  - Rajesh Basak, PhD Scholar (Computer Science and Engineering)
  - Debopriyo Banerjee, PhD Scholar (Computer Science and Engineering)
  - Chandan Misra, PhD Scholar (Advanced Technology Development Center)

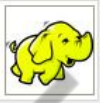
  Past Members
  - Harshit Gupta, Dual Degree (Computer Science and Engineering)
  - Nikhil Agrawal, Dual Degree (Computer Science and Engineering)
  - Ashish Kale, M.Tech (Computer Science and Engineering)
  - Major Sujeet Deshmukh, M.Tech. (Information Technology)

- **CIC Engineers**
  - Alokes Chattopadhyay
  - Alok Baran Das

- **Faculty**
  - Soumya K. Ghosh (Dept. of Computer Science and Engineering)
  - Shamik Sural (Dept. of Computer Science and Engineering)

> We plan to add more team members as time progresses. After all, the key aim of the project remains to make people learn.

Latest News



MAR 23, 2016
MegHadoop
MegHadoop, a Hadoop cluster on Meghamala is up and available for use.

AUG 12, 2015
MeghaData
MeghaData, a data storage service is under beta testing.

APR 25, 2015
Inauguration
Inauguration and Workshop on Meghamala was carried out on 30th April 2015.

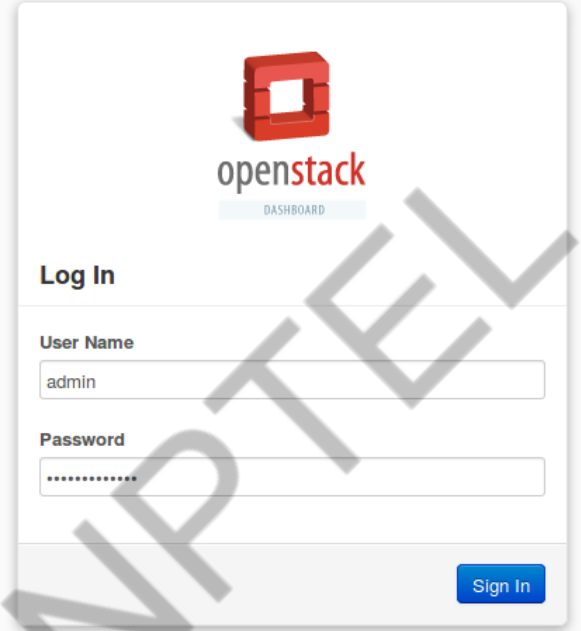
MAR 17, 2015
Installation Complete
Hardware and software installed. Testing in progress.

MAR 13, 2015
GUI on Meghamala
VM images with GUI have been created on Meghamala.

NPTEL

Meghamala - IITKgp Cloud

(*using OpenStack*)



NPTEL

Horizon Login Page

openstack admin RegionOne admin Sign Out

Project
- Compute
  - Overview
  - Instances
  - Volumes
  - Images
  - Access & Security
- Network
- Object Store
- Orchestration

Admin

Overview

Usage Summary

Select a period of time to query its usage:

From: 2017-06-01 To: 2017-06-30 Submit The date should be in YYYY-mm-dd format.

Active Instances: 30 **Active RAM:** 304GB **This Period's VCPU-Hours:** 679.47 **This Period's GB-Hours:** 64662.52

Usage

Download CSV Summary

Project Name	VCPUs	Disk	RAM	VCPU Hours	Disk GB Hours
admin	128	2855	304GB	679.47	64662.52

Displaying 1 item

NPTEL

openstack admin RegionOne admin Sign Out

Project
- Compute
  - Overview
  - Instances
  - Volumes
  - Images
  - Access & Security
- Network
- Object Store
- Orchestration

Admin

Overview

Limit Summary

Instances
Used inf of No Limit

VCPUs
Used inf of No Limit

RAM
Used inf.0PB of No Limit

Floating IPs
Used 43 of 250

Security Groups
Used 1 of No Limit

Volumes
Used 21 of 200

Volume Storage
Used 3.0TB of 3.7TB

Usage Summary

Select a period of time to query its usage:

From: 2017-06-01 To: 2017-06-30 Submit The date should be in YYYY-mm-dd format.

Active Instances: 30 **Active RAM:** 304GB **This Period's VCPU-Hours:** 680.30 **This Period's GB-Hours:** 64741.88

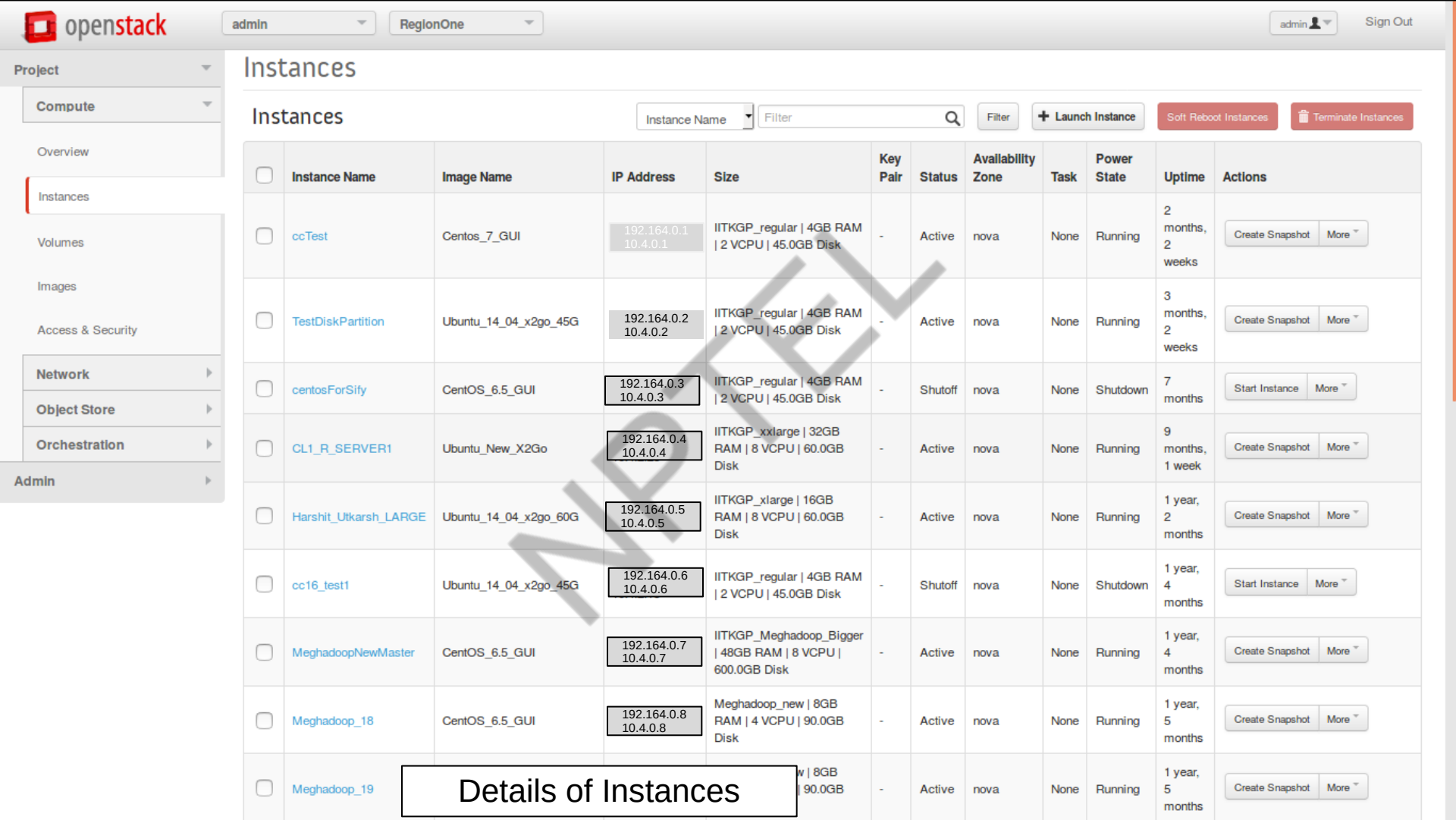
Usage

Download CSV Summary

Instance Name	VCPUs	Disk	RAM	Uptime
nik_windows	2	45	4GB	2 years, 2 months
Ravi_Teja_2	8	160	16GB	1 year, 4 months
[illegible]	[illegible]	[illegible]	16GB	1 year, 11 months
[illegible]	[illegible]	[illegible]	4GB	1 year, 10 months

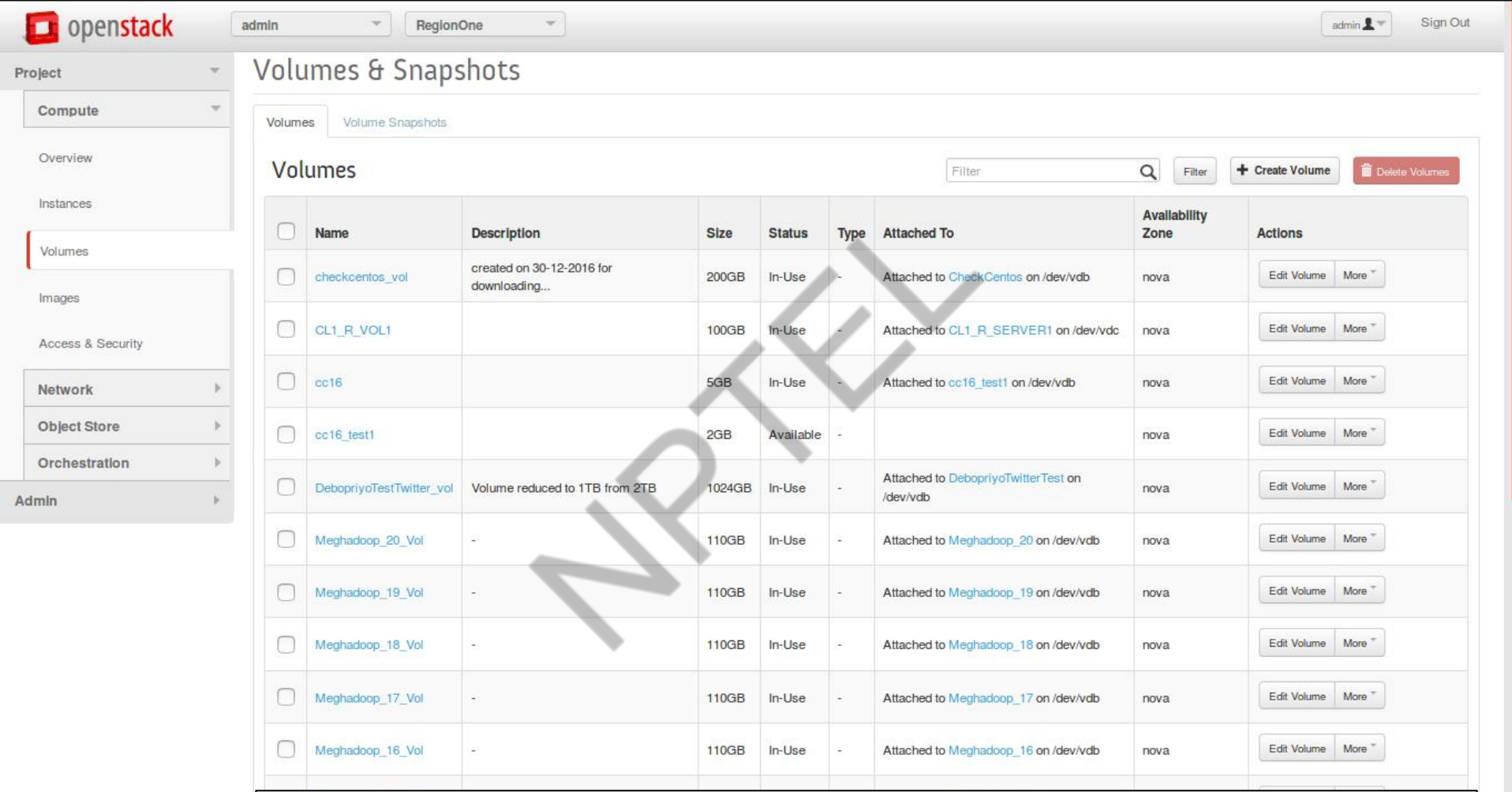
NPTEL

Graphical representation of resource usage



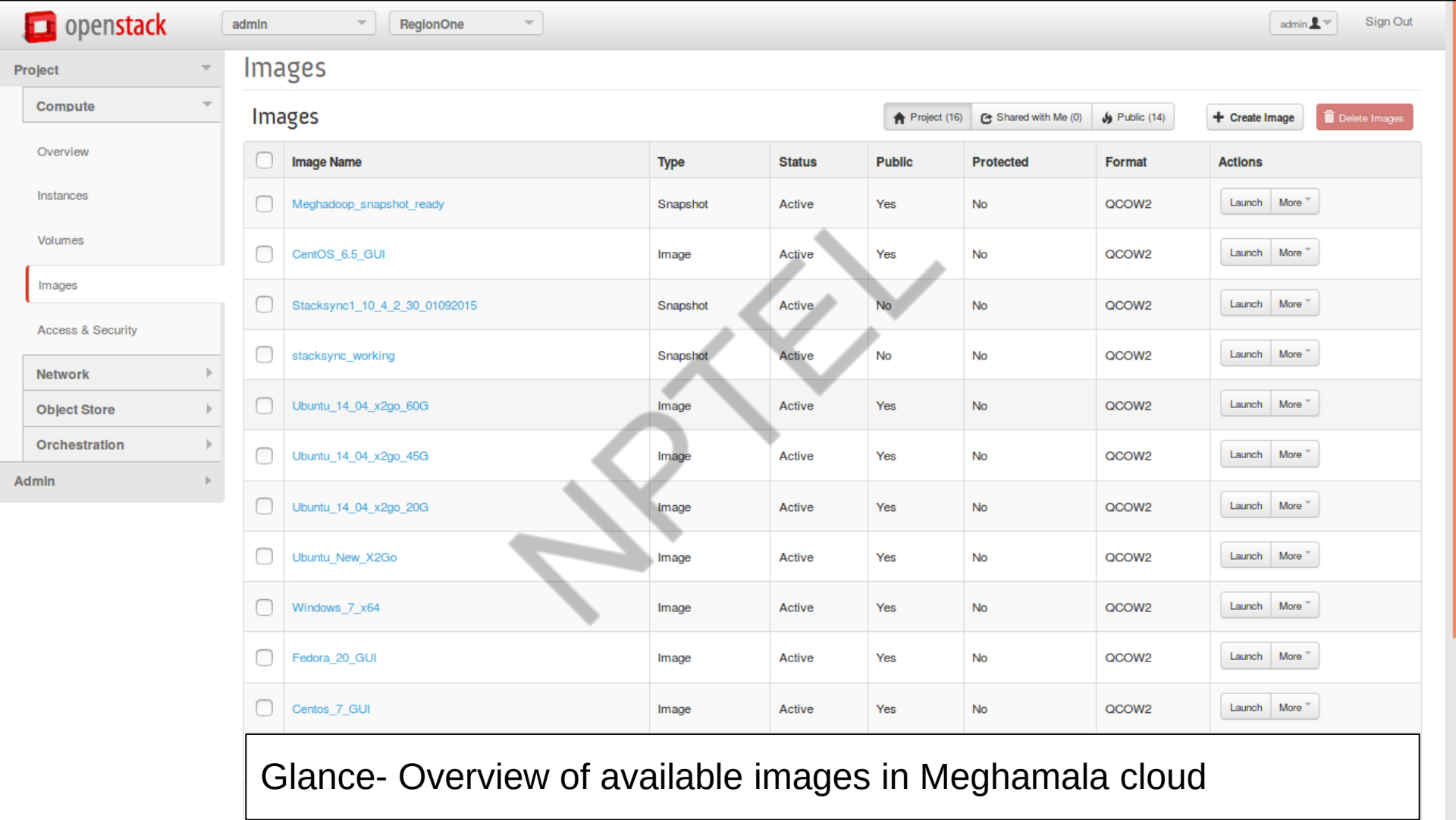
NPTEL

Details of Instances



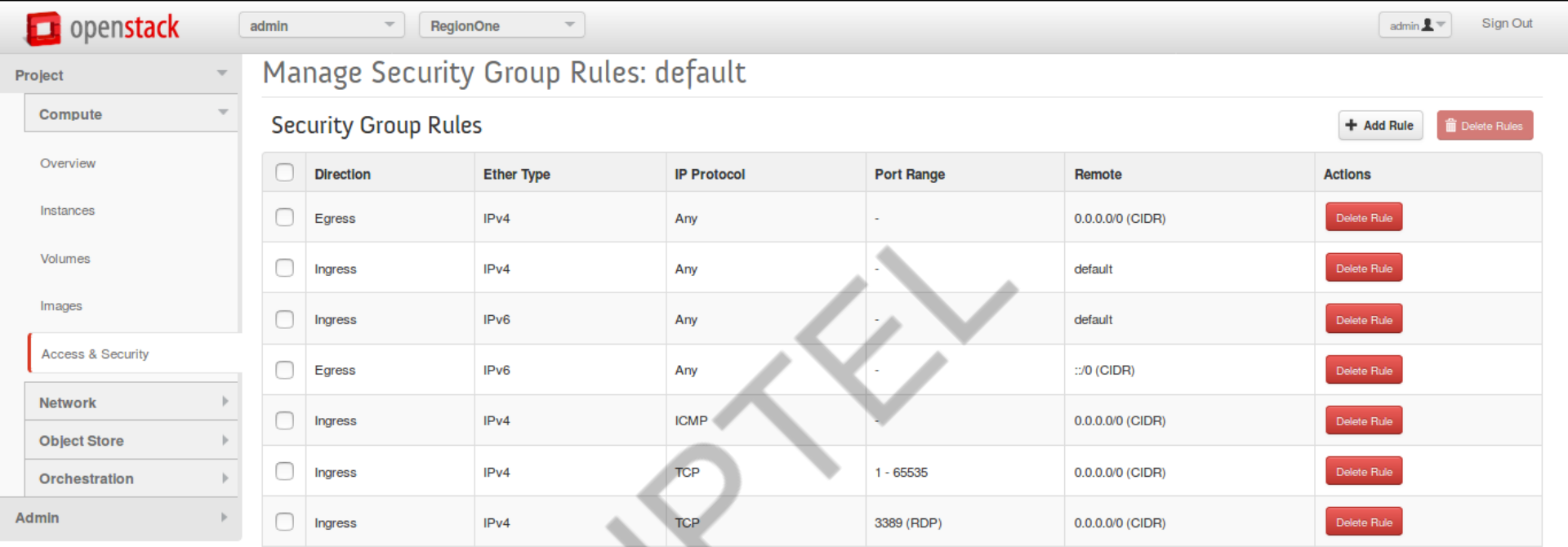
NPTEL

Cinder- details of Volumes



NPTEL

Glance- Overview of available images in Meghamala cloud



NPTEL

Neutron- Network Access Rules of a Security Group

openstack admin RegionOne admin Sign Out

Project
Admin
System Panel
Overview
Hypervisors
Host Aggregates
Instances
Volumes
Flavors
Images
Networks
Routers
System Info
Identity Panel

All Hypervisors

Hypervisor Summary

VCPU Usage
Used 128 of 144

Memory Usage
Used 305GB of 377GB

Disk Usage
Used 2.8TB of 3.1TB

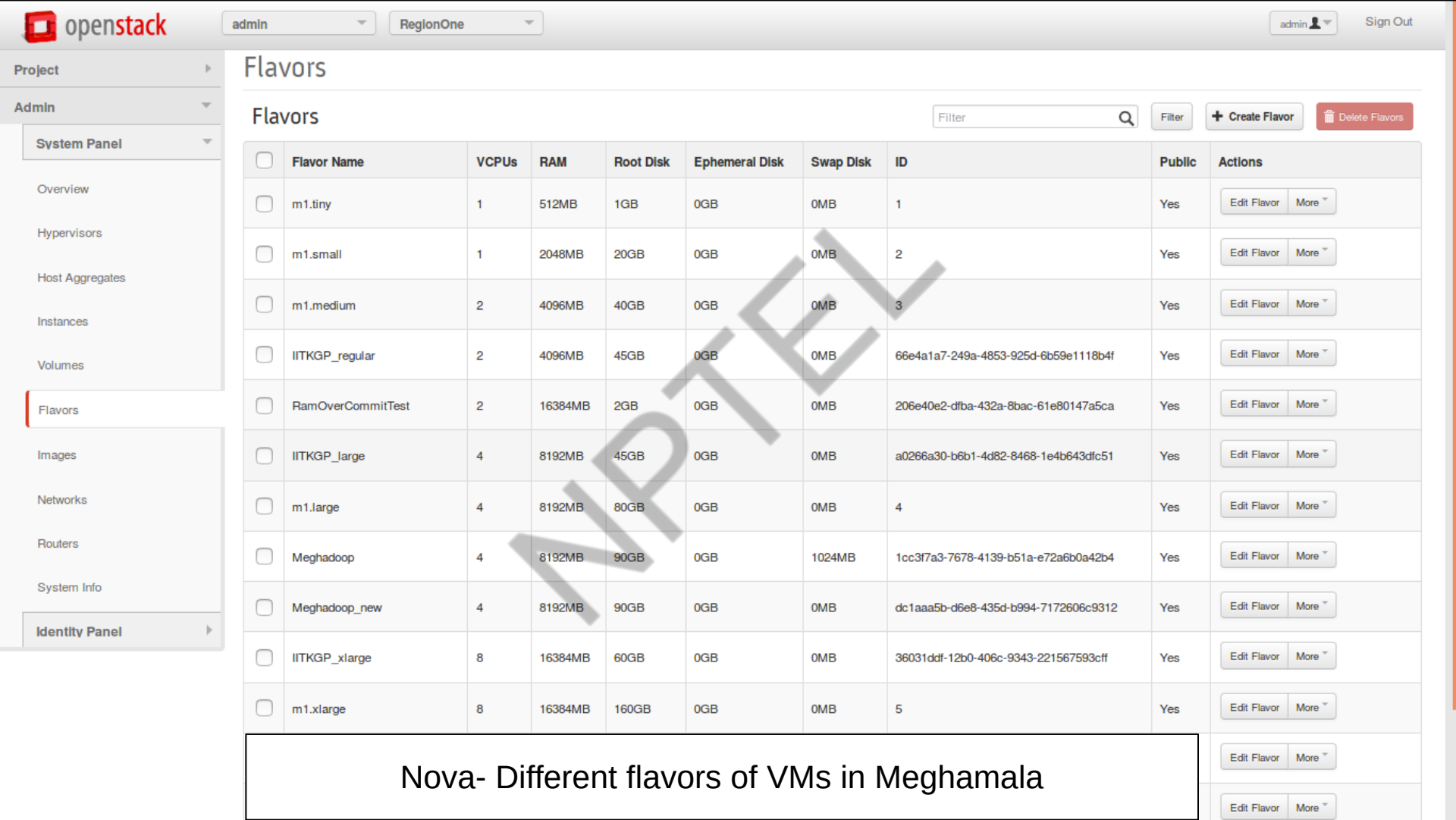
Hypervisors

Hostname	Type	VCPUs (total)	VCPUs (used)	RAM (total)	RAM (used)	Storage (total)	Storage (used)	Instances
node-77.domain.tld	QEMU	48	52	125GB	104GB	1.0TB	930.0GB	13
node-62.domain.tld	QEMU	48	26	125GB	84GB	1.0TB	985.0GB	5
node-79.domain.tld	QEMU	48	50	125GB	116GB	1.0TB	940.0GB	12

Displaying 3 items

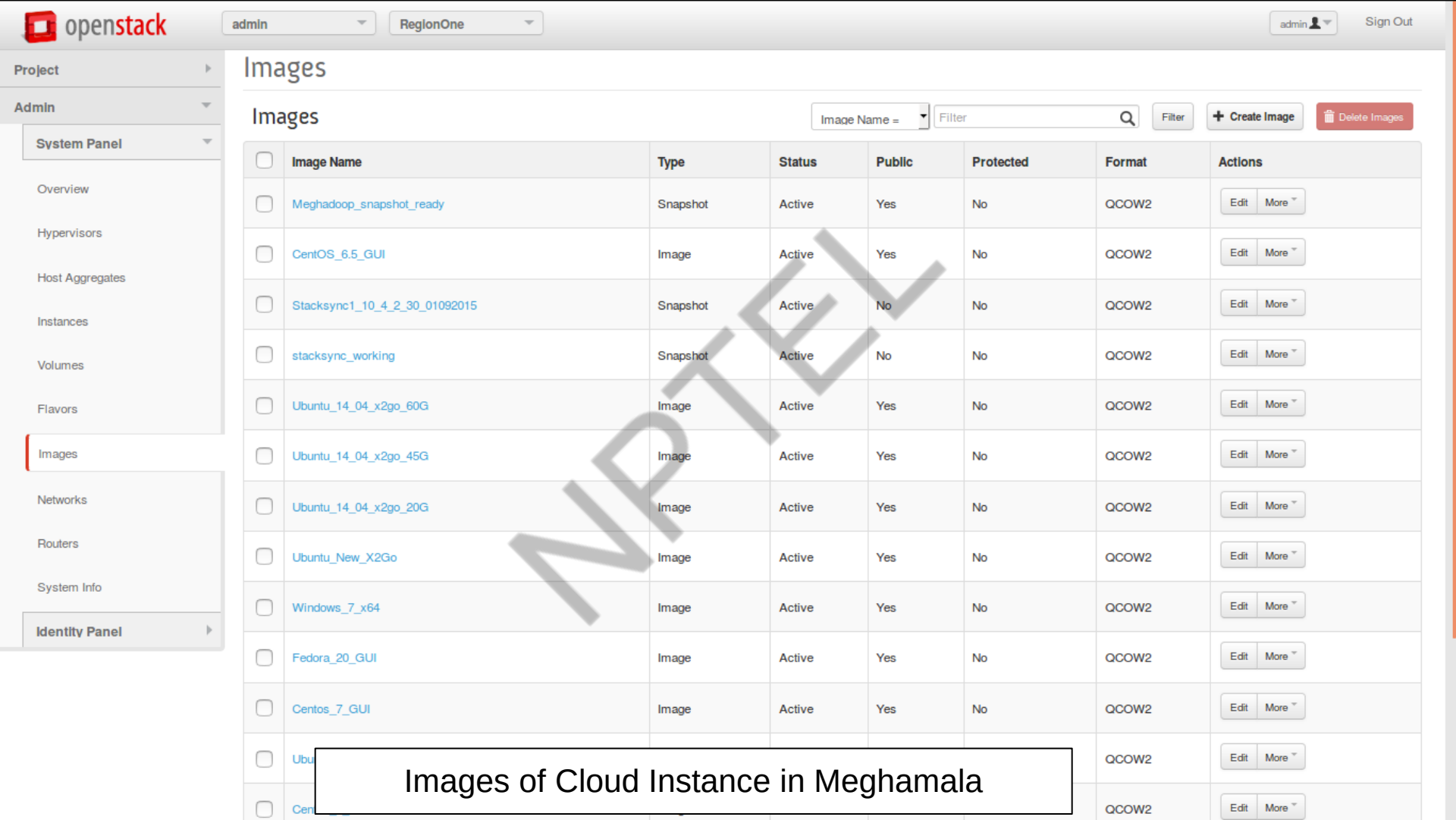
NPTEL

Nova-vCPU, RAM, Storage details of Hypervisors



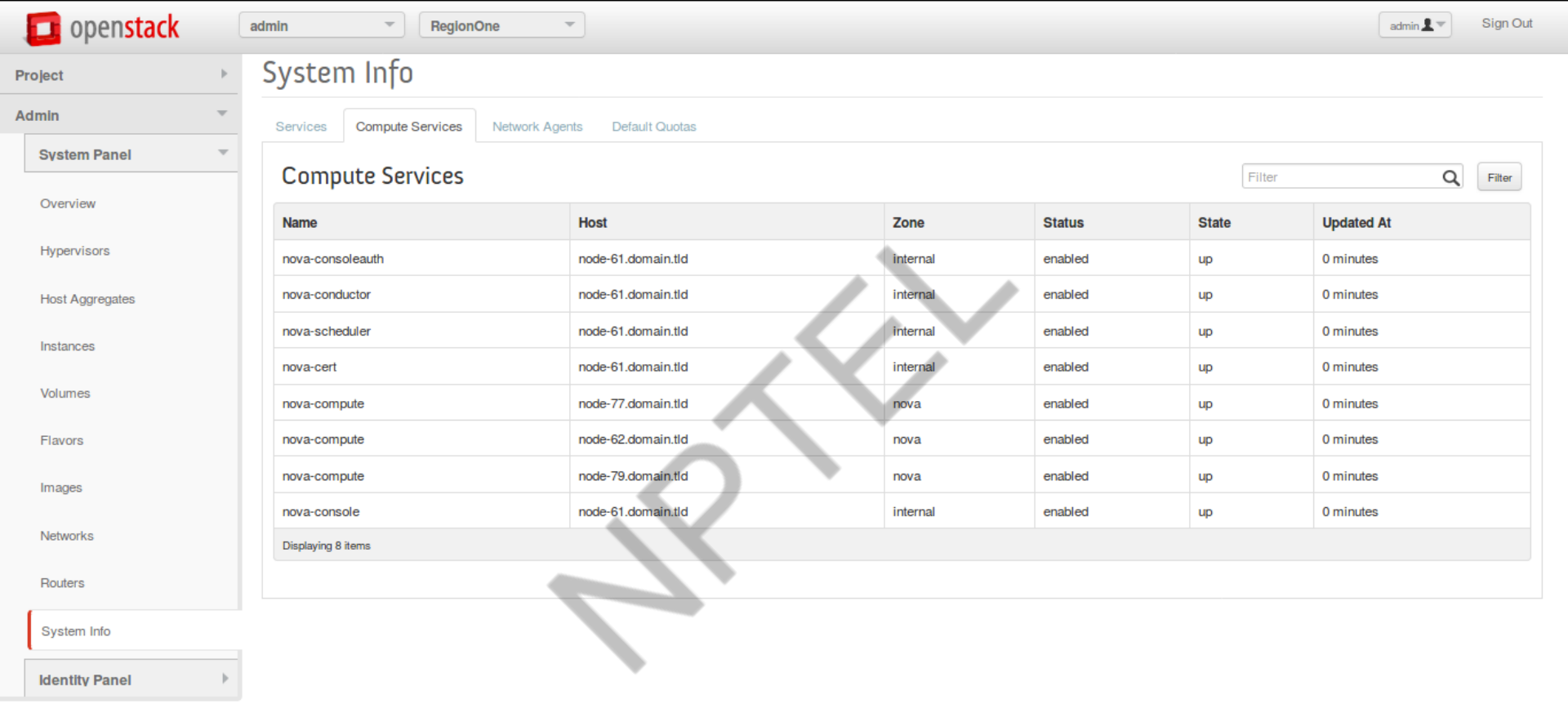
NPTEL

Nova- Different flavors of VMs in Meghamala



NPTEL

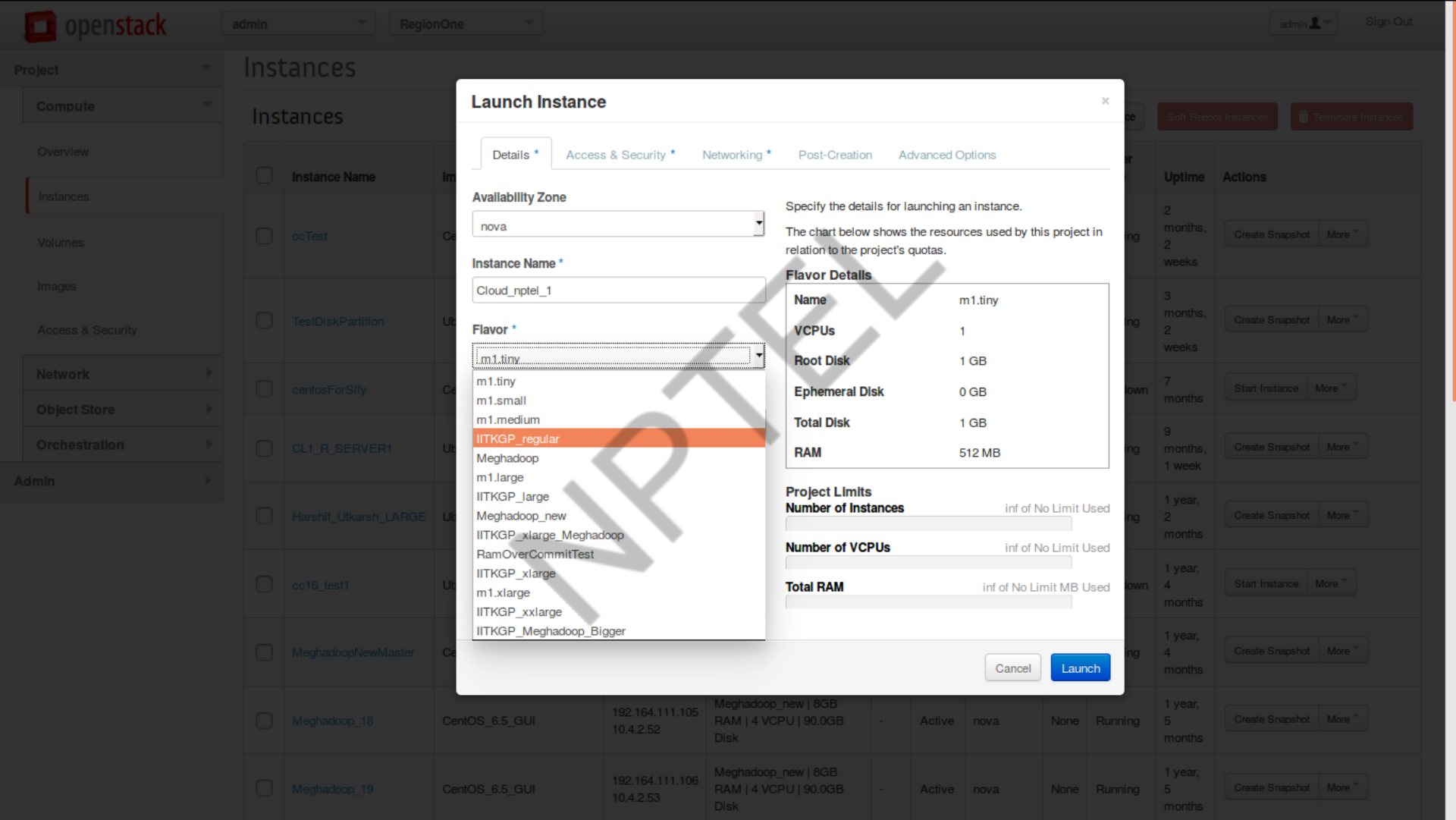
Images of Cloud Instance in Meghamala

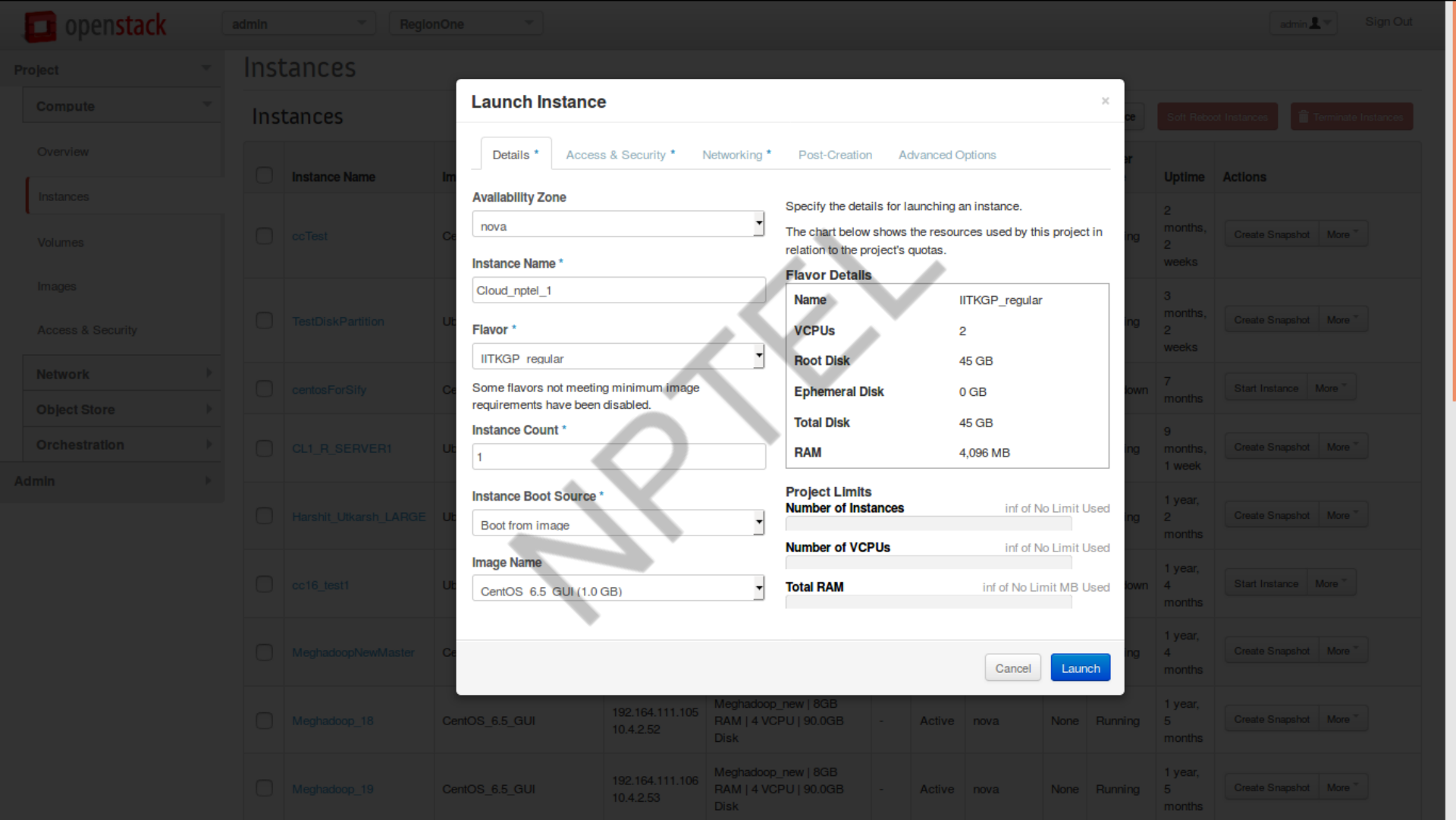


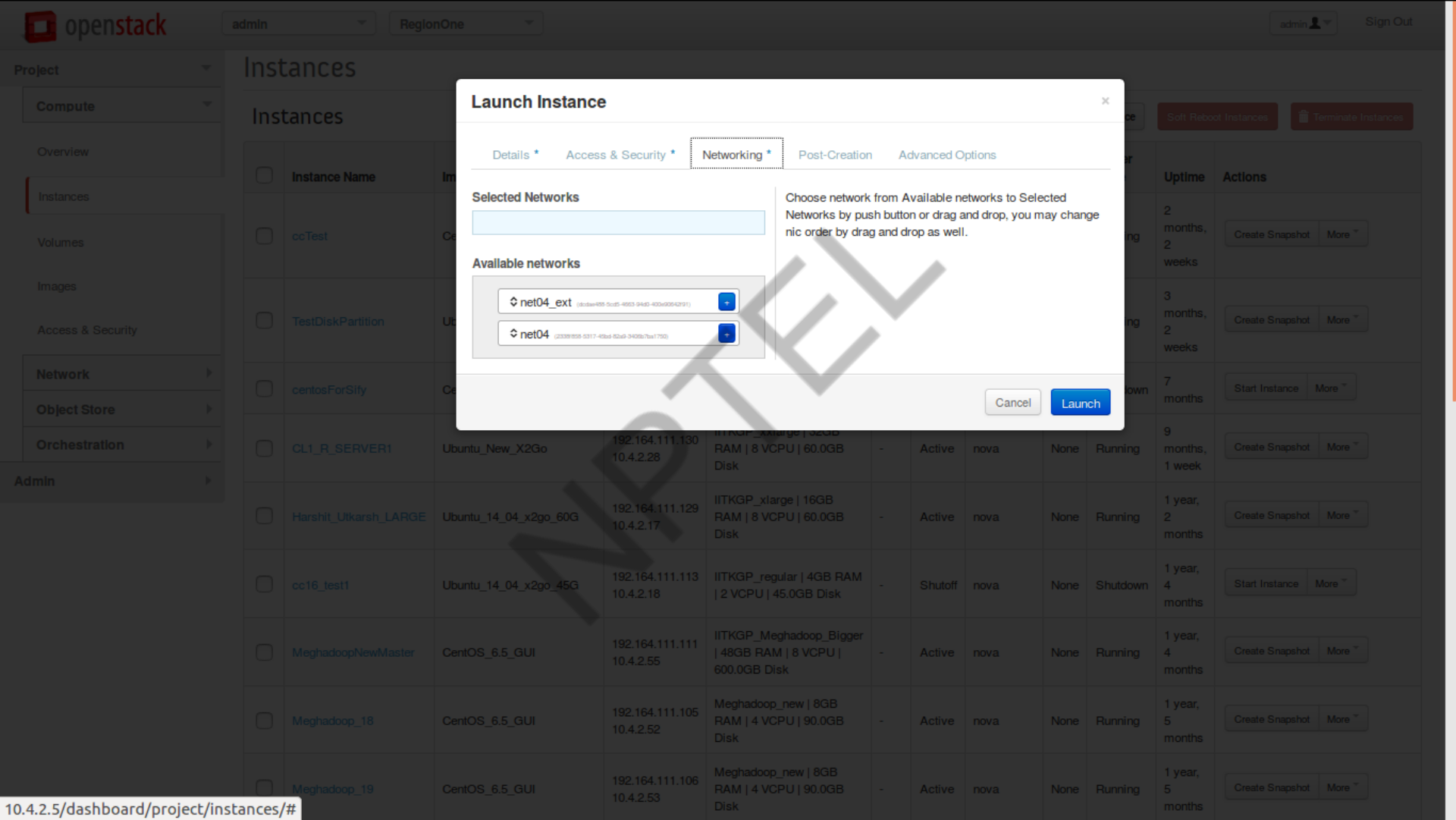
NPTEL

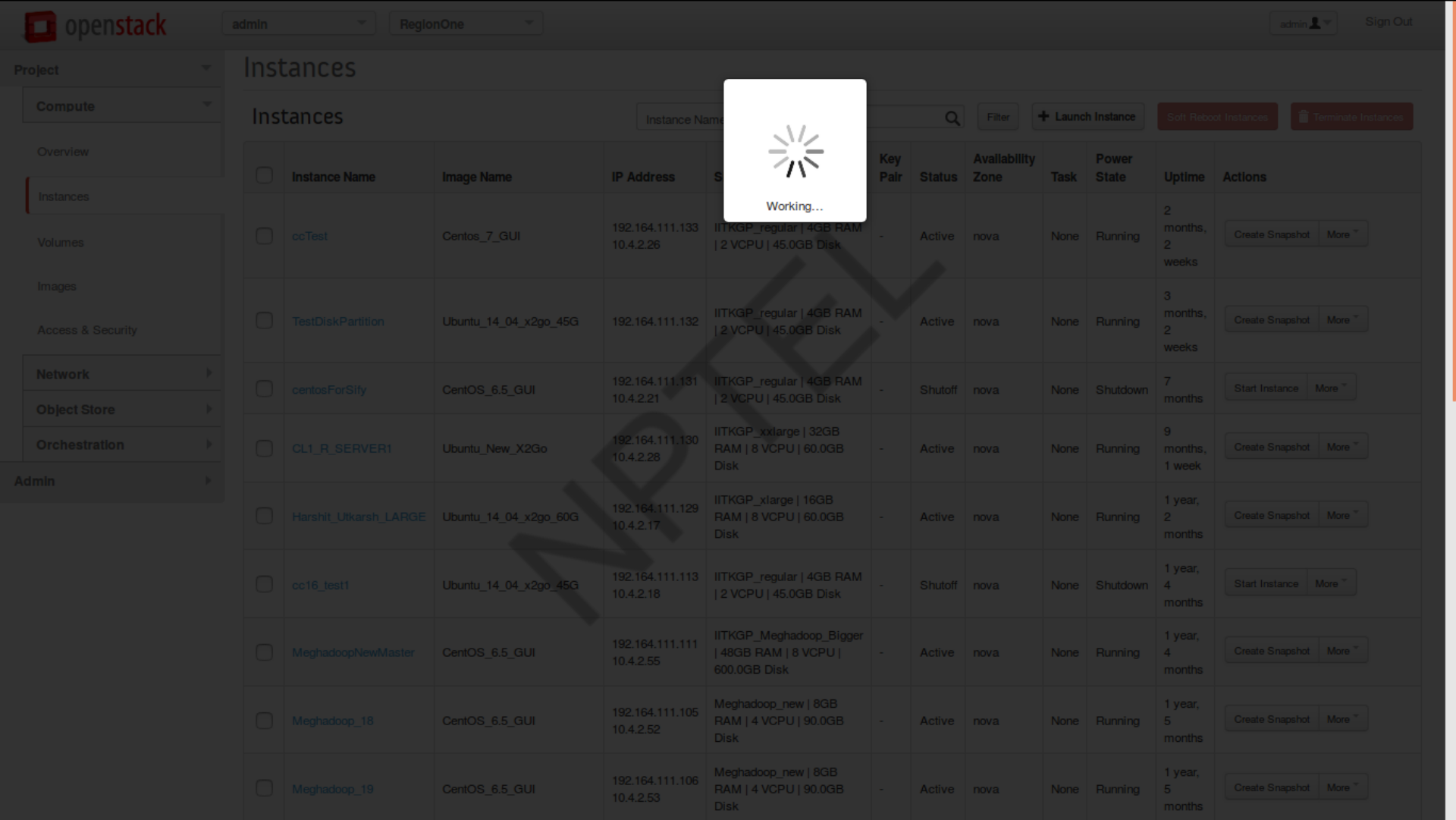
Compute Services in Meghamala

VM Creation


openstack
admin
RegionOne
Sign Out
Project
Compute
Overview
Instances
Volumes
Images
Access & Security
Network
Object Store
Orchestration
Admin
Instances
Instances
Soft Reboot Instances
Terminate Instances
Instance Name
Uptime
Actions
ccTest
TestDiskPartition
centosForSify
CL1_R_SERVER1
Harshit_Utkarsh_LARGE
cc16_test1
MeghadoopNewMaster
Meghadoop_18
Meghadoop_19
CentOS_6.5_GUI
192.164.111.105
10.4.2.52
192.164.111.106
10.4.2.53
Meghadoop_new | 8GB RAM | 4 VCPU | 90.0GB Disk
Active
nova
None
Running
Create Snapshot
More
Start Instance
Launch Instance
Details *
Access & Security *
Networking *
Post-Creation
Advanced Options
Availability Zone
nova
Instance Name *
Cloud_nptel_1
Flavor *
m1.tiny
m1.tiny
m1.small
m1.medium
IITKGP_regular
Meghadoop
m1.large
IITKGP_large
Meghadoop_new
IITKGP_xlarge_Meghadoop
RamOverCommitTest
IITKGP_xlarge
m1.xlarge
IITKGP_xxlarge
IITKGP_Meghadoop_Bigger
Specify the details for launching an instance.
The chart below shows the resources used by this project in relation to the project's quotas.
Flavor Details
Name m1.tiny
VCPUs 1
Root Disk 1 GB
Ephemeral Disk 0 GB
Total Disk 1 GB
RAM 512 MB
Project Limits
Number of Instances inf of No Limit Used
Number of VCPUs inf of No Limit Used
Total RAM inf of No Limit MB Used
Cancel
Launch
NPTEL


openstack
admin
RegionOne
Sign Out
Project
Compute
Overview
Instances
Volumes
Images
Access & Security
Network
Object Store
Orchestration
Admin
Instances
Instances
Soft Reboot Instances
Terminate Instances
Launch Instance
Details *
Access & Security *
Networking *
Post-Creation
Advanced Options
Availability Zone
nova
Instance Name *
Cloud_nptel_1
Flavor *
IITKGP_regular
Some flavors not meeting minimum image requirements have been disabled.
Instance Count *
1
Instance Boot Source *
Boot from image
Image Name
CentOS_6.5_GUI (1.0 GB)
Specify the details for launching an instance.
The chart below shows the resources used by this project in relation to the project's quotas.
Flavor Details
Name IITKGP_regular
VCPUs 2
Root Disk 45 GB
Ephemeral Disk 0 GB
Total Disk 45 GB
RAM 4,096 MB
Project Limits
Number of Instances inf of No Limit Used
Number of VCPUs inf of No Limit Used
Total RAM inf of No Limit MB Used
Cancel
Launch
NPTEL


openstack
admin
RegionOne
admin
Sign Out
Project
Compute
Overview
Instances
Volumes
Images
Access & Security
Network
Object Store
Orchestration
Admin
Instances
Instances
Soft Reboot Instances
Terminate Instances
Launch Instance
Details *
Access & Security *
Networking *
Post-Creation
Advanced Options
Selected Networks
Available networks
net04_ext
net04
Choose network from Available networks to Selected Networks by push button or drag and drop, you may change nic order by drag and drop as well.
Cancel
Launch
Instance Name
Uptime
Actions
ccTest
2 months, 2 weeks
TestDiskPartition
3 months, 2 weeks
centosForSify
7 months
CL1_R_SERVER1
Ubuntu_New_X2Go
192.164.111.130
10.4.2.28
9 months, 1 week
Harshit_Utkarsh_LARGE
Ubuntu_14_04_x2go_60G
192.164.111.129
10.4.2.17
IITKGP_xlarge | 16GB RAM | 8 VCPU | 60.0GB Disk
1 year, 2 months
cc16_test1
Ubuntu_14_04_x2go_45G
192.164.111.113
10.4.2.18
IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk
Shutoff
Shutdown
1 year, 4 months
MeghadoopNewMaster
CentOS_6.5_GUI
192.164.111.111
10.4.2.55
IITKGP_Meghadoop_Bigger | 48GB RAM | 8 VCPU | 600.0GB Disk
Meghadoop_18
192.164.111.105
10.4.2.52
Meghadoop_new | 8GB RAM | 4 VCPU | 90.0GB Disk
1 year, 5 months
Meghadoop_19
192.164.111.106
10.4.2.53
Active
nova
None
Running
Create Snapshot
More
Start Instance
10.4.2.5/dashboard/project/instances/#
NPTEL


openstack
admin
RegionOne
admin
Sign Out
Project
Compute
Overview
Instances
Volumes
Images
Access & Security
Network
Object Store
Orchestration
Admin
Instances
Instances
Instance Name
Filter
+ Launch Instance
Soft Reboot Instances
Terminate Instances
Working...
Instance Name
Image Name
IP Address
Key Pair
Status
Availability Zone
Task
Power State
Uptime
Actions
ccTest
Centos_7_GUI
192.164.111.133
10.4.2.26
IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk
-
Active
nova
None
Running
2 months, 2 weeks
Create Snapshot
More
TestDiskPartition
Ubuntu_14_04_x2go_45G
192.164.111.132
IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk
-
Active
nova
None
Running
3 months, 2 weeks
Create Snapshot
More
centosForSify
CentOS_6.5_GUI
192.164.111.131
10.4.2.21
IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk
-
Shutoff
nova
None
Shutdown
7 months
Start Instance
More
CL1_R_SERVER1
Ubuntu_New_X2Go
192.164.111.130
10.4.2.28
IITKGP_xxlarge | 32GB RAM | 8 VCPU | 60.0GB Disk
-
Active
nova
None
Running
9 months, 1 week
Create Snapshot
More
Harshit_Utkarsh_LARGE
Ubuntu_14_04_x2go_60G
192.164.111.129
10.4.2.17
IITKGP_xlarge | 16GB RAM | 8 VCPU | 60.0GB Disk
-
Active
nova
None
Running
1 year, 2 months
Create Snapshot
More
cc16_test1
Ubuntu_14_04_x2go_45G
192.164.111.113
10.4.2.18
IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk
-
Shutoff
nova
None
Shutdown
1 year, 4 months
Start Instance
More
MeghadoopNewMaster
CentOS_6.5_GUI
192.164.111.111
10.4.2.55
IITKGP_Meghadoop_Bigger | 48GB RAM | 8 VCPU | 600.0GB Disk
-
Active
nova
None
Running
1 year, 4 months
Create Snapshot
More
Meghadoop_18
CentOS_6.5_GUI
192.164.111.105
10.4.2.52
Meghadoop_new | 8GB RAM | 4 VCPU | 90.0GB Disk
-
Active
nova
None
Running
1 year, 5 months
Create Snapshot
More
Meghadoop_19
CentOS_6.5_GUI
192.164.111.106
10.4.2.53
Meghadoop_new | 8GB RAM | 4 VCPU | 90.0GB Disk
-
Active
nova
None
Running
1 year, 5 months
Create Snapshot
More
NPTEL

Success: Launched instance named "Cloud_nptel_1".

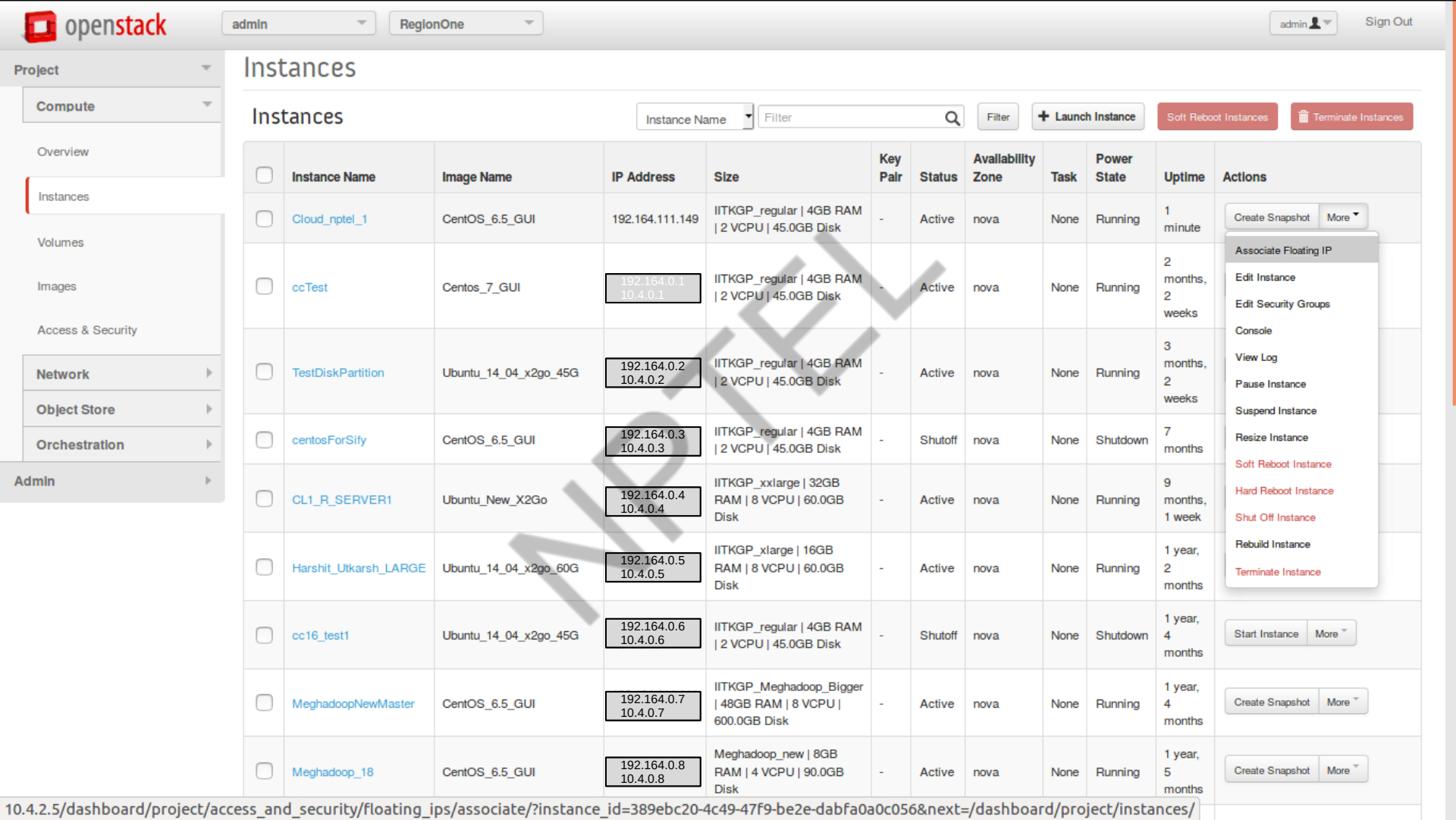
Instances

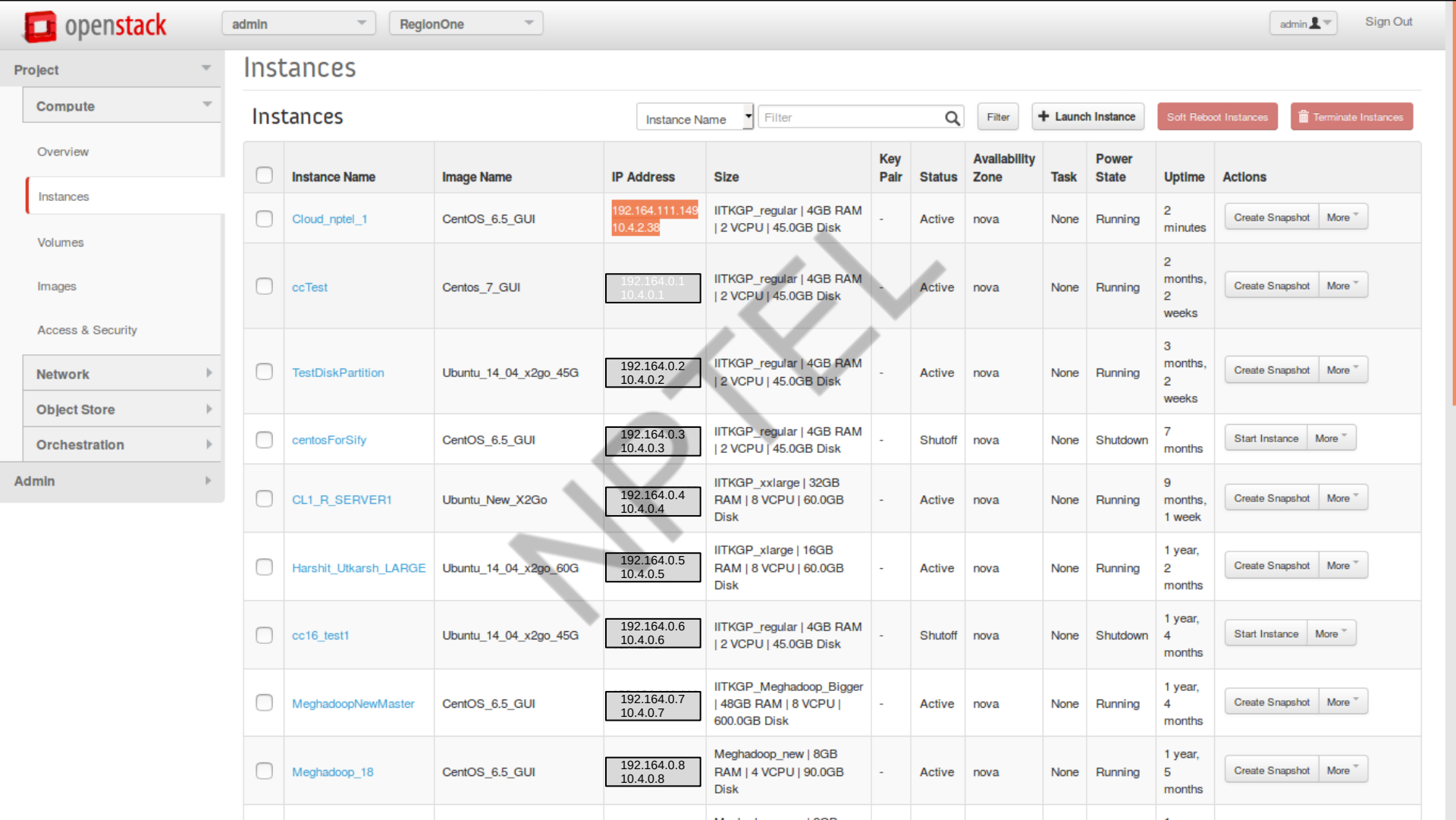
Instances

Instance Name | Filter | Filter | + Launch Instance | Soft Reboot Instances | Terminate Instances

Instance Name	Image Name	IP Address	Size	Key Pair	Status	Availability Zone	Task	Power State	Uptime	Actions
Cloud_nptel_1	CentOS_6.5_GUI		IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk	-	Build	nova	Scheduling	No State	0 minutes	Associate Floating IP / More
ccTest	Centos_7_GUI	192.164.0.1 10.4.0.1	IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk	-	Active	nova	None	Running	2 months, 2 weeks	Create Snapshot / More
TestDiskPartition	Ubuntu_14_04_x2go_45G	192.164.0.2 10.4.0.2	IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk	-	Active	nova	None	Running	3 months, 2 weeks	Create Snapshot / More
centosForSify	CentOS_6.5_GUI	192.164.0.3 10.4.0.3	IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk	-	Shutoff	nova	None	Shutdown	7 months	Start Instance / More
CL1_R_SERVER1	Ubuntu_New_X2Go	192.164.0.4 10.4.0.4	IITKGP_xxlarge | 32GB RAM | 8 VCPU | 60.0GB Disk	-	Active	nova	None	Running	9 months, 1 week	Create Snapshot / More
Harshit_Utkarsh_LARGE	Ubuntu_14_04_x2go_60G	192.164.0.5 10.4.0.5	IITKGP_xlarge | 16GB RAM | 8 VCPU | 60.0GB Disk	-	Active	nova	None	Running	1 year, 2 months	Create Snapshot / More
cc16_test1	Ubuntu_14_04_x2go_45G	192.164.0.6 10.4.0.6	IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk	-	Shutoff	nova	None	Shutdown	1 year, 4 months	Start Instance / More
MeghadoopNewMaster	CentOS_6.5_GUI	192.164.0.7 10.4.0.7	IITKGP_Meghadoop_Bigger | 48GB RAM | 8 VCPU | 600.0GB Disk	-	Active	nova	None	Running	1 year, 4 months	Create Snapshot / More
Meghadoop_18	CentOS_6.5_GUI	192.164.0.8 10.4.0.8	Meghadoop_new | 8GB RAM | 4 VCPU | 90.0GB Disk	-	Active	nova	None	Running	1 year, 5 months	Create Snapshot / More

NPTEL


openstack
admin
RegionOne
admin
Sign Out
Project
Compute
Overview
Instances
Volumes
Images
Access & Security
Network
Object Store
Orchestration
Admin
Instances
Instances
Instance Name
Filter
Filter
Launch Instance
Soft Reboot Instances
Terminate Instances
Instance Name
Image Name
IP Address
Size
Key Pair
Status
Availability Zone
Task
Power State
Uptime
Actions
Cloud_nptel_1
CentOS_6.5_GUI
192.164.111.149
IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk
-
Active
nova
None
Running
1 minute
Create Snapshot
More
Associate Floating IP
Edit Instance
Edit Security Groups
Console
View Log
Pause Instance
Suspend Instance
Resize Instance
Soft Reboot Instance
Hard Reboot Instance
Shut Off Instance
Rebuild Instance
Terminate Instance
ccTest
Centos_7_GUI
192.164.0.1
10.4.0.1
IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk
-
Active
nova
None
Running
2 months, 2 weeks
TestDiskPartition
Ubuntu_14_04_x2go_45G
192.164.0.2
10.4.0.2
IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk
-
Active
nova
None
Running
3 months, 2 weeks
centosForSify
CentOS_6.5_GUI
192.164.0.3
10.4.0.3
IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk
-
Shutoff
nova
None
Shutdown
7 months
CL1_R_SERVER1
Ubuntu_New_X2Go
192.164.0.4
10.4.0.4
IITKGP_xxlarge | 32GB RAM | 8 VCPU | 60.0GB Disk
-
Active
nova
None
Running
9 months, 1 week
Harshit_Utkarsh_LARGE
Ubuntu_14_04_x2go_60G
192.164.0.5
10.4.0.5
IITKGP_xlarge | 16GB RAM | 8 VCPU | 60.0GB Disk
-
Active
nova
None
Running
1 year, 2 months
cc16_test1
Ubuntu_14_04_x2go_45G
192.164.0.6
10.4.0.6
IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk
-
Shutoff
nova
None
Shutdown
1 year, 4 months
Start Instance
More
MeghadoopNewMaster
CentOS_6.5_GUI
192.164.0.7
10.4.0.7
IITKGP_Meghadoop_Bigger | 48GB RAM | 8 VCPU | 600.0GB Disk
-
Active
nova
None
Running
1 year, 4 months
Create Snapshot
More
Meghadoop_18
CentOS_6.5_GUI
192.164.0.8
10.4.0.8
Meghadoop_new | 8GB RAM | 4 VCPU | 90.0GB Disk
-
Active
nova
None
Running
1 year, 5 months
Create Snapshot
More
10.4.2.5/dashboard/project/access_and_security/floating_ips/associate/?instance_id=389ebc20-4c49-47f9-be2e-dabfa0a0c056&next=/dashboard/project/instances/
NPTEL

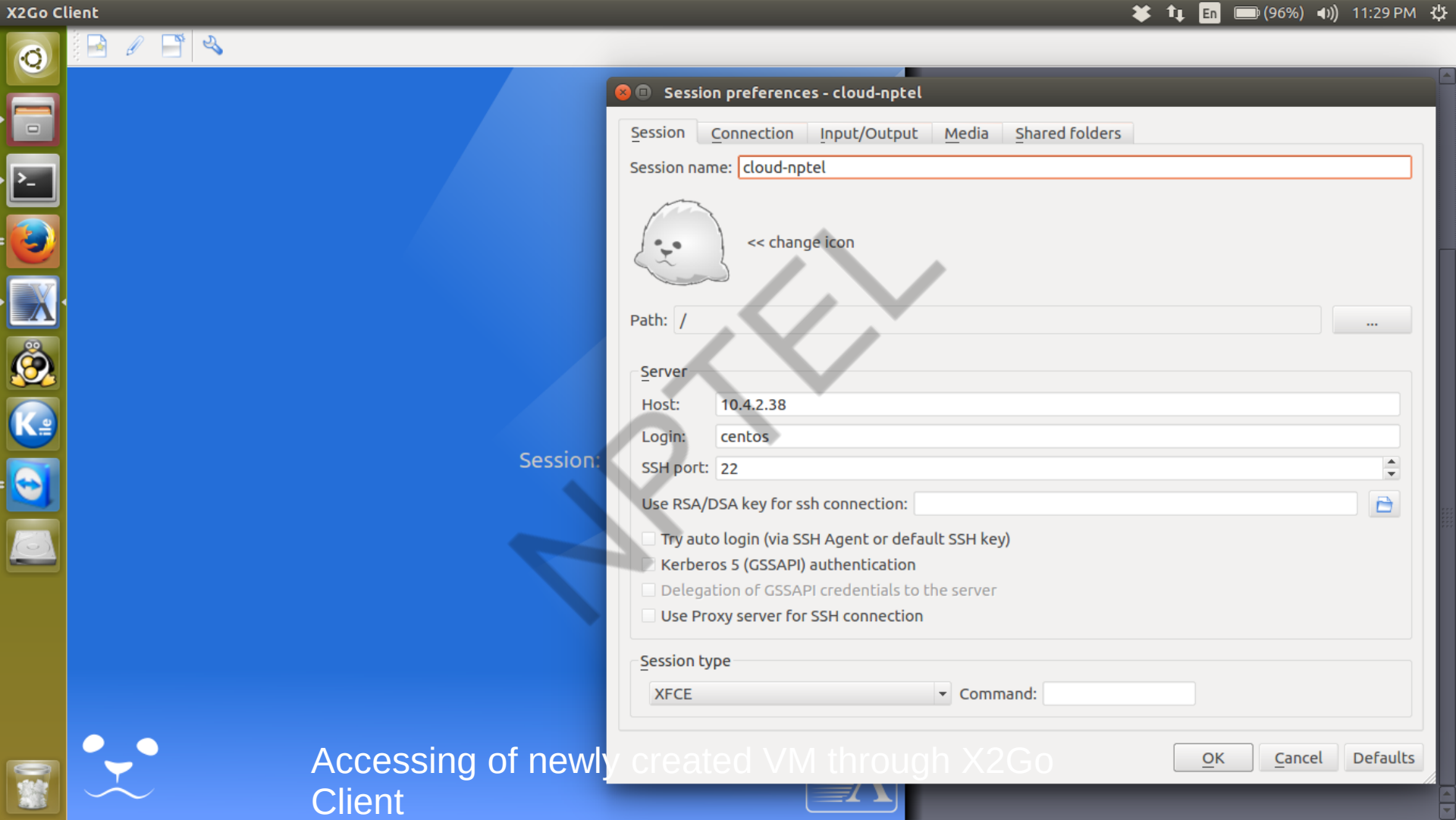

openstack
admin
RegionOne
admin
Sign Out
Project
Compute
Overview
Instances
Volumes
Images
Access & Security
Network
Object Store
Orchestration
Admin
Instances
Instances
Instance Name
Filter
Filter
Launch Instance
Soft Reboot Instances
Terminate Instances
Instance Name
Image Name
IP Address
Size
Key Pair
Status
Availability Zone
Task
Power State
Uptime
Actions
Cloud_nptel_1
CentOS_6.5_GUI
192.164.111.149
10.4.2.38
IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk
-
Active
nova
None
Running
2 minutes
Create Snapshot
More
ccTest
Centos_7_GUI
192.164.0.1
10.4.0.1
IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk
-
Active
nova
None
Running
2 months, 2 weeks
Create Snapshot
More
TestDiskPartition
Ubuntu_14_04_x2go_45G
192.164.0.2
10.4.0.2
IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk
-
Active
nova
None
Running
3 months, 2 weeks
Create Snapshot
More
centosForSify
CentOS_6.5_GUI
192.164.0.3
10.4.0.3
IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk
-
Shutoff
nova
None
Shutdown
7 months
Start Instance
More
CL1_R_SERVER1
Ubuntu_New_X2Go
192.164.0.4
10.4.0.4
IITKGP_xxlarge | 32GB RAM | 8 VCPU | 60.0GB Disk
-
Active
nova
None
Running
9 months, 1 week
Create Snapshot
More
Harshit_Utkarsh_LARGE
Ubuntu_14_04_x2go_60G
192.164.0.5
10.4.0.5
IITKGP_xlarge | 16GB RAM | 8 VCPU | 60.0GB Disk
-
Active
nova
None
Running
1 year, 2 months
Create Snapshot
More
cc16_test1
Ubuntu_14_04_x2go_45G
192.164.0.6
10.4.0.6
IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk
-
Shutoff
nova
None
Shutdown
1 year, 4 months
Start Instance
More
MeghadoopNewMaster
CentOS_6.5_GUI
192.164.0.7
10.4.0.7
IITKGP_Meghadoop_Bigger | 48GB RAM | 8 VCPU | 600.0GB Disk
-
Active
nova
None
Running
1 year, 4 months
Create Snapshot
More
Meghadoop_18
CentOS_6.5_GUI
192.164.0.8
10.4.0.8
Meghadoop_new | 8GB RAM | 4 VCPU | 90.0GB Disk
-
Active
nova
None
Running
1 year, 5 months
Create Snapshot
More
NPTEL

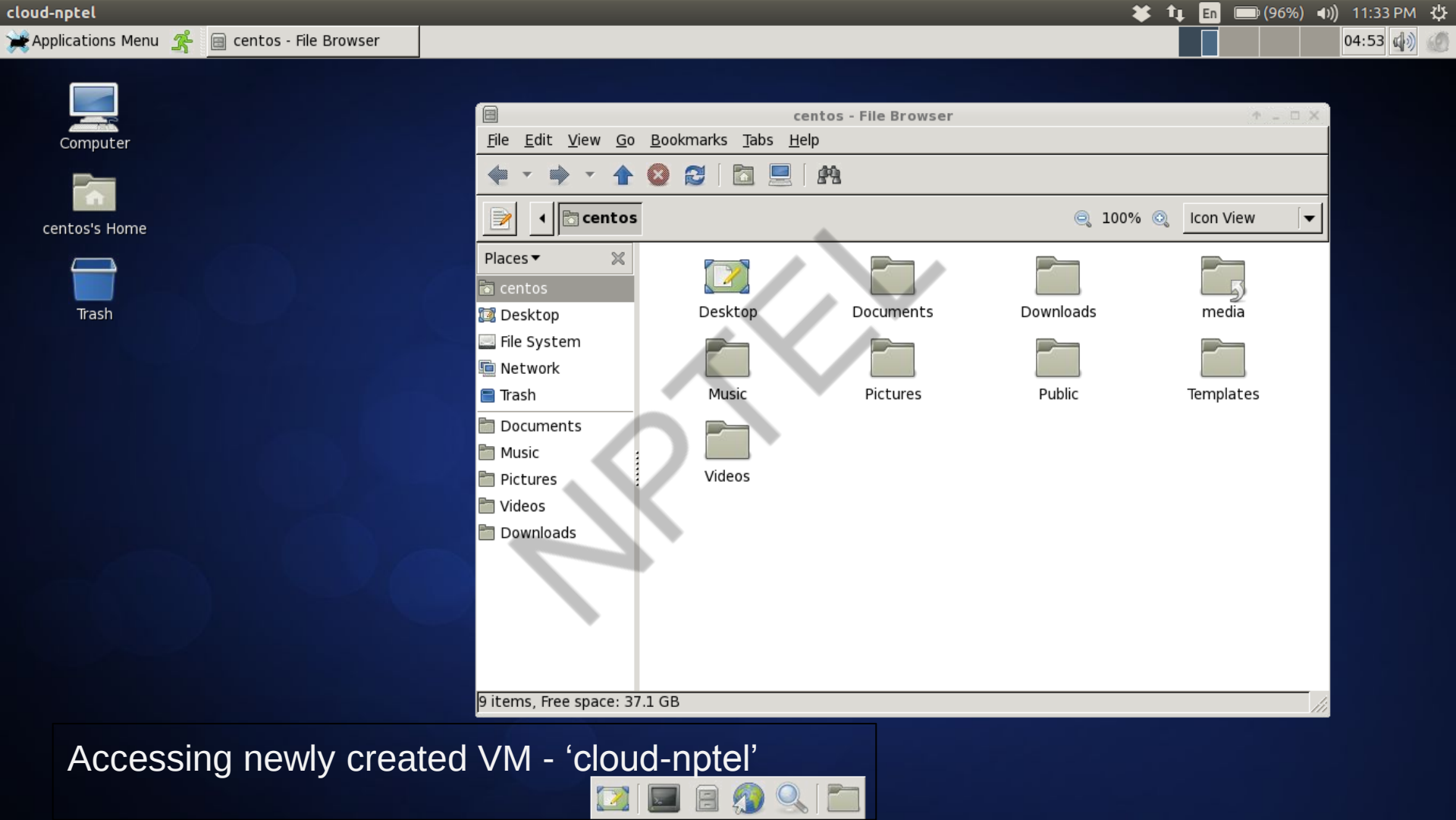
rr@rr-X556UF: ~ × | rr@rr-X556UF: ~ ×

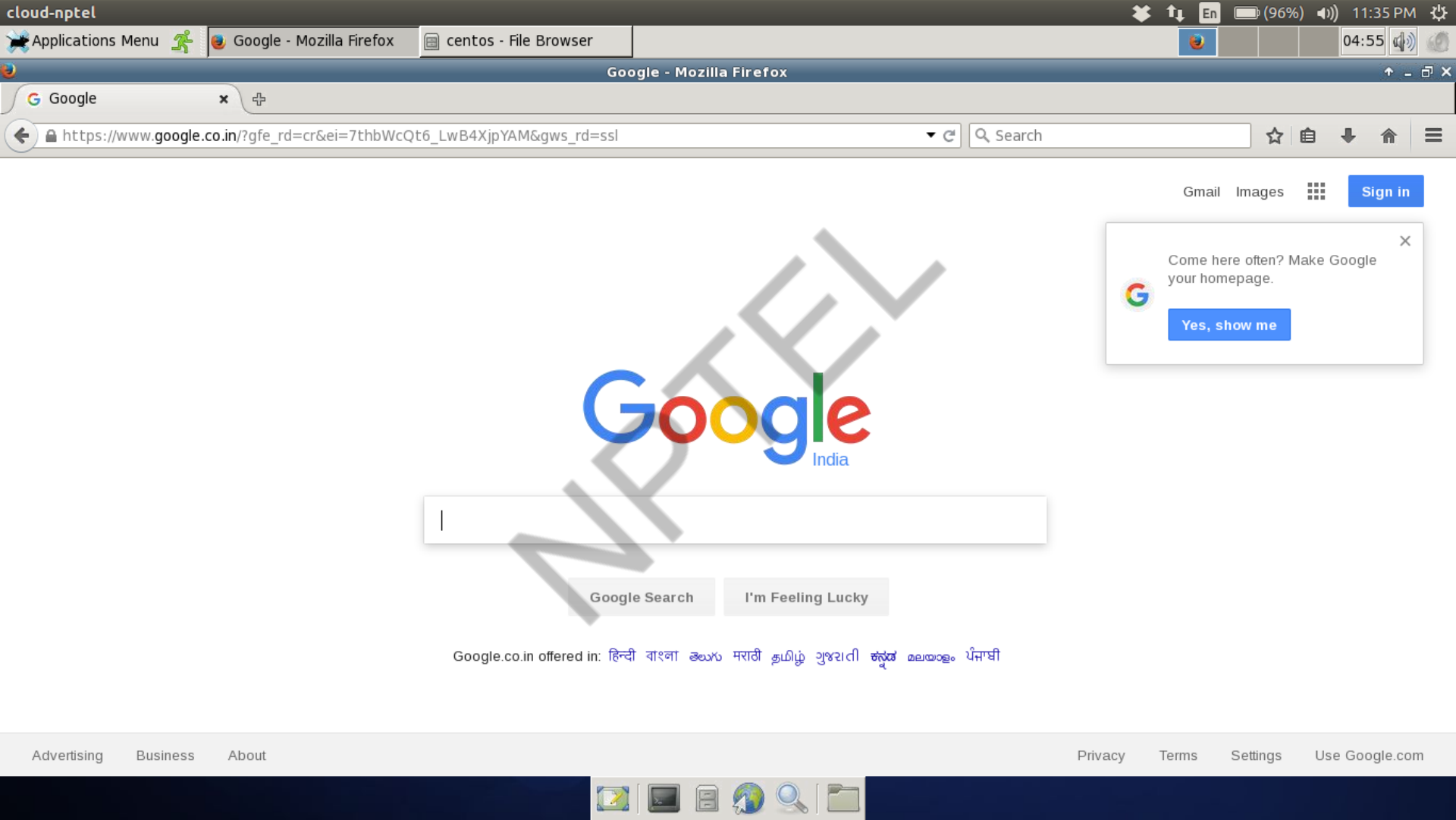
```
rr@rr-X556UF:~$ ping 10.4.2.38
PING 10.4.2.38 (10.4.2.38) 56(84) bytes of data.
64 bytes from 10.4.2.38: icmp_seq=1 ttl=60 time=1.73 ms
64 bytes from 10.4.2.38: icmp_seq=2 ttl=60 time=1.01 ms
64 bytes from 10.4.2.38: icmp_seq=3 ttl=60 time=1.08 ms
64 bytes from 10.4.2.38: icmp_seq=4 ttl=60 time=1.18 ms
64 bytes from 10.4.2.38: icmp_seq=5 ttl=60 time=0.857 ms
```

NPTEL

Accessing VM by User


X2Go Client
En
(96%)
11:29 PM
Session preferences - cloud-nptel
Session
Connection
Input/Output
Media
Shared folders
Session name: cloud-nptel
<< change icon
Path: /
...
Server
Host: 10.4.2.38
Login: centos
SSH port: 22
Use RSA/DSA key for ssh connection:
Try auto login (via SSH Agent or default SSH key)
Kerberos 5 (GSSAPI) authentication
Delegation of GSSAPI credentials to the server
Use Proxy server for SSH connection
Session type
XFCE
Command:
OK
Cancel
Defaults
Session:
NPTEL
Accessing of newly created VM through X2Go Client


cloud-nptel
En
(96%)
11:33 PM
Applications Menu
centos - File Browser
04:53
Computer
centos's Home
Trash
centos - File Browser
File Edit View Go Bookmarks Tabs Help
centos
100%
Icon View
Places
centos
Desktop
File System
Network
Trash
Documents
Music
Pictures
Videos
Downloads
Desktop
Documents
Downloads
media
Music
Pictures
Public
Templates
Videos
9 items, Free space: 37.1 GB
NPTEL
Accessing newly created VM - ‘cloud-nptel’


cloud-nptel
En
(96%)
11:35 PM
Applications Menu
Google - Mozilla Firefox
centos - File Browser
04:55
Google - Mozilla Firefox
Google
https://www.google.co.in/?gfe_rd=cr&ei=7thbWcQt6_LwB4XjpYAM&gws_rd=ssl
Search
Gmail
Images
Sign in
Come here often? Make Google your homepage.
Yes, show me
Google
India
Google Search
I'm Feeling Lucky
Google.co.in offered in: हिन्दी বাংলা తెలుగు मराठी தமிழ் ગુજરાતી ಕನ್ನಡ മലയാളം ਪੰਜਾਬੀ
Advertising
Business
About
Privacy
Terms
Settings
Use Google.com
NPTEL

cloud-nptel

Applications Menu | Prof. Soumya K. Ghosh -... | centos - File Browser

Run Program...
Terminal Emulator
File Manager
Mail Reader
Web Browser
Settings
Administration
Accessories
Documentation
Graphics
Internet
Office
Sound & Video
System
Log Out

Prof. Soumya K. Ghosh - YouTube - Mozilla Firefox

be.com/watch?v=OL8prdrpJOg

soumya k ghosh

Sign in

Prof. Soumya K. Ghosh

Up next

Autoplay

VM Termination

openstack admin RegionOne admin Sign Out

Project
- Compute
  - Overview
  - Instances
  - Volumes
  - Images
  - Access & Security
- Network
- Object Store
- Orchestration

Admin

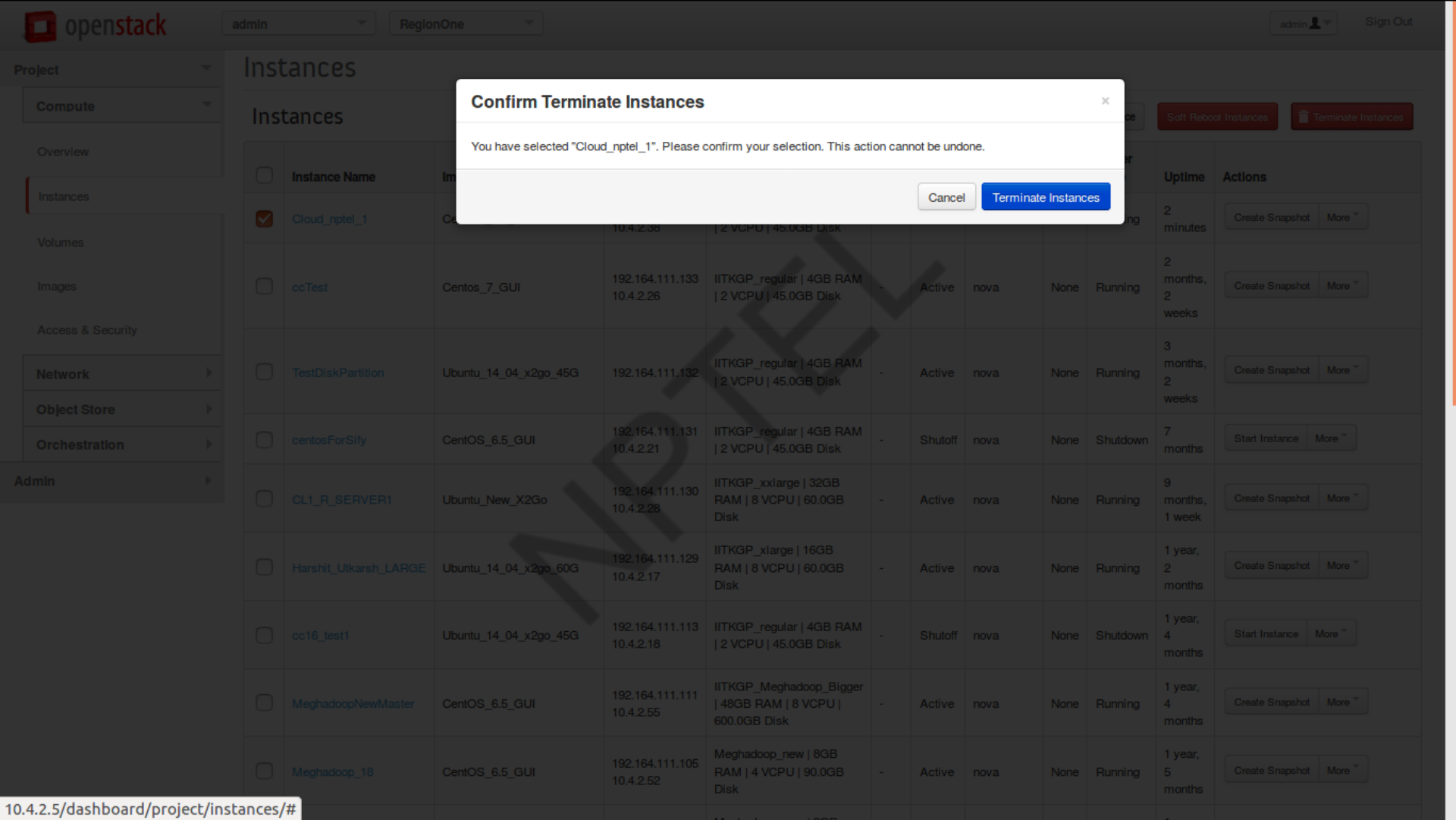
Instances

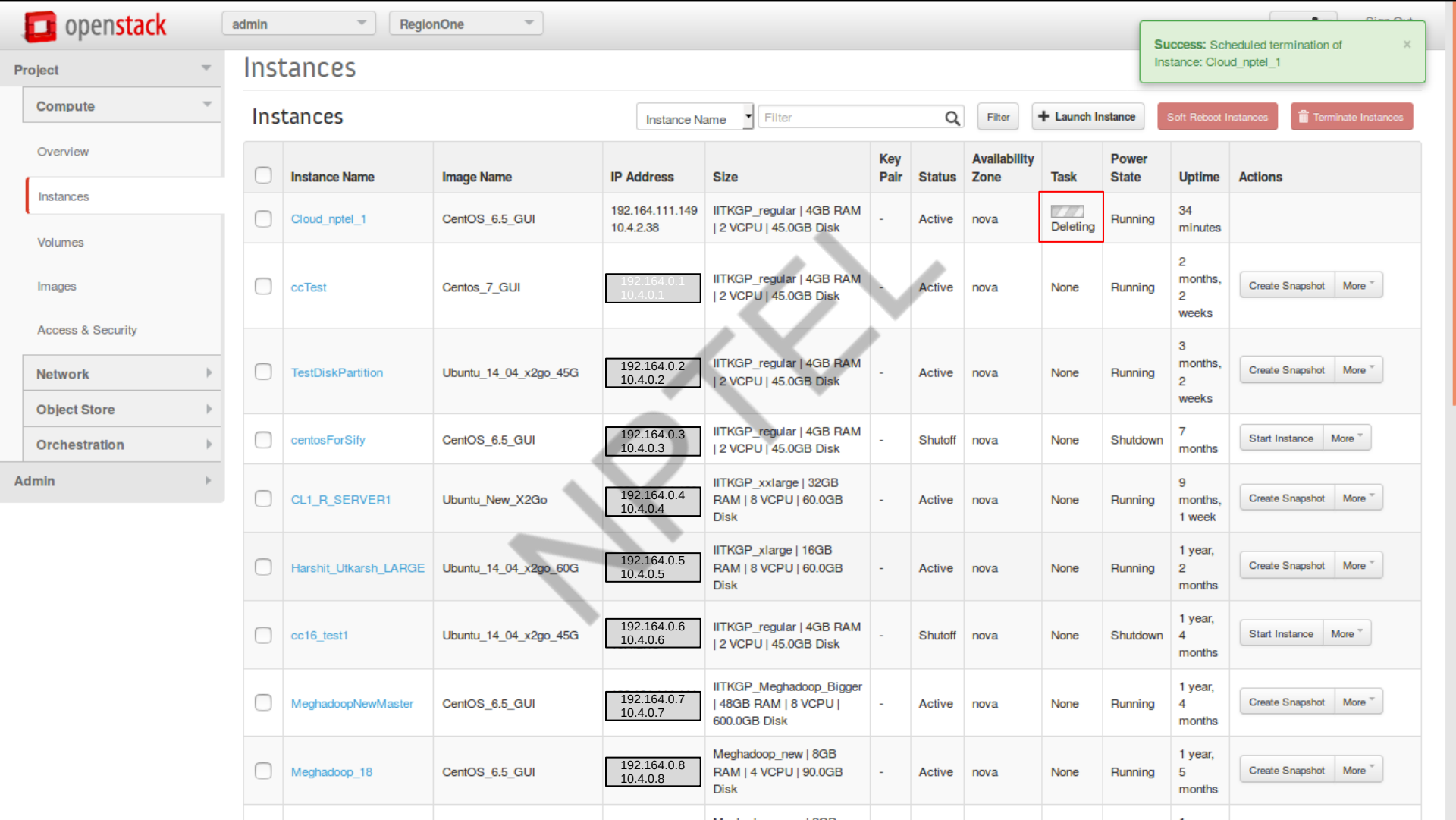
Instances

Instance Name | Filter | Filter | + Launch Instance | Soft Reboot Instances | Terminate Instances

Instance Name	Image Name	IP Address	Size	Key Pair	Status	Availability Zone	Task	Power State	Uptime	Actions
Cloud_nptel_1	CentOS_6.5_GUI	192.164.111.149 10.4.2.38	IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk	-	Active	nova	None	Running	2 minutes	Create Snapshot | More
ccTest	Centos_7_GUI	192.164.0.1 10.4.0.1	IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk	-	Active	nova	None	Running	2 months, 2 weeks	Create Snapshot | More
TestDiskPartition	Ubuntu_14_04_x2go_45G	192.164.0.2 10.4.0.2	IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk	-	Active	nova	None	Running	3 months, 2 weeks	Create Snapshot | More
centosForSify	CentOS_6.5_GUI	192.164.0.3 10.4.0.3	IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk	-	Shutoff	nova	None	Shutdown	7 months	Start Instance | More
CL1_R_SERVER1	Ubuntu_New_X2Go	192.164.0.4 10.4.0.4	IITKGP_xxlarge | 32GB RAM | 8 VCPU | 60.0GB Disk	-	Active	nova	None	Running	9 months, 1 week	Create Snapshot | More
Harshit_Utkarsh_LARGE	Ubuntu_14_04_x2go_60G	192.164.0.5 10.4.0.5	IITKGP_xlarge | 16GB RAM | 8 VCPU | 60.0GB Disk	-	Active	nova	None	Running	1 year, 2 months	Create Snapshot | More
cc16_test1	Ubuntu_14_04_x2go_45G	192.164.0.6 10.4.0.6	IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk	-	Shutoff	nova	None	Shutdown	1 year, 4 months	Start Instance | More
MeghadoopNewMaster	CentOS_6.5_GUI	192.164.0.7 10.4.0.7	IITKGP_Meghadoop_Bigger | 48GB RAM | 8 VCPU | 600.0GB Disk	-	Active	nova	None	Running	1 year, 4 months	Create Snapshot | More
Meghadoop_18	CentOS_6.5_GUI	192.164.0.8 10.4.0.8	Meghadoop_new | 8GB RAM | 4 VCPU | 90.0GB Disk	-	Active	nova	None	Running	1 year, 5 months	Create Snapshot | More

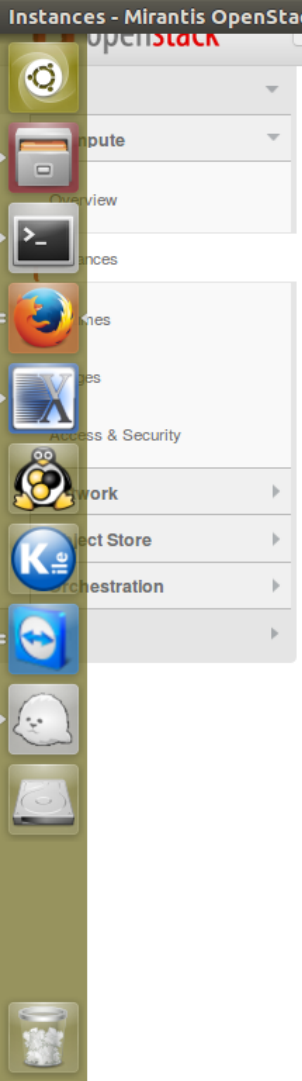
NPTEL


openstack
admin
RegionOne
admin
Sign Out
Project
Compute
Overview
Instances
Volumes
Images
Access & Security
Network
Object Store
Orchestration
Admin
Instances
Instances
Soft Reboot Instances
Terminate Instances
Confirm Terminate Instances
You have selected "Cloud_nptel_1". Please confirm your selection. This action cannot be undone.
Cancel
Terminate Instances
Instance Name
Uptime
Actions
Cloud_nptel_1
2 minutes
Create Snapshot
More
ccTest
Centos_7_GUI
192.164.111.133
10.4.2.26
IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk
Active
nova
None
Running
2 months, 2 weeks
TestDiskPartition
Ubuntu_14_04_x2go_45G
192.164.111.132
IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk
Active
nova
None
Running
3 months, 2 weeks
centosForSify
CentOS_6.5_GUI
192.164.111.131
10.4.2.21
IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk
Shutoff
nova
None
Shutdown
7 months
Start Instance
CL1_R_SERVER1
Ubuntu_New_X2Go
192.164.111.130
10.4.2.28
IITKGP_xxlarge | 32GB RAM | 8 VCPU | 60.0GB Disk
Active
nova
None
Running
9 months, 1 week
Harshit_Utkarsh_LARGE
Ubuntu_14_04_x2go_60G
192.164.111.129
10.4.2.17
IITKGP_xlarge | 16GB RAM | 8 VCPU | 60.0GB Disk
Active
nova
None
Running
1 year, 2 months
cc16_test1
Ubuntu_14_04_x2go_45G
192.164.111.113
10.4.2.18
IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk
Shutoff
nova
None
Shutdown
1 year, 4 months
MeghadoopNewMaster
CentOS_6.5_GUI
192.164.111.111
10.4.2.55
IITKGP_Meghadoop_Bigger | 48GB RAM | 8 VCPU | 600.0GB Disk
Active
nova
None
Running
1 year, 4 months
Meghadoop_18
CentOS_6.5_GUI
192.164.111.105
10.4.2.52
Meghadoop_new | 8GB RAM | 4 VCPU | 90.0GB Disk
Active
nova
None
Running
1 year, 5 months
10.4.2.5/dashboard/project/instances/#


openstack
admin
RegionOne
Success: Scheduled termination of Instance: Cloud_nptel_1
Project
Compute
Overview
Instances
Volumes
Images
Access & Security
Network
Object Store
Orchestration
Admin
Instances
Instances
Instance Name
Filter
Filter
+ Launch Instance
Soft Reboot Instances
Terminate Instances
Instance Name | Image Name | IP Address | Size | Key Pair | Status | Availability Zone | Task | Power State | Uptime | Actions
Cloud_nptel_1 | CentOS_6.5_GUI | 192.164.111.149 10.4.2.38 | IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk | - | Active | nova | Deleting | Running | 34 minutes
ccTest | Centos_7_GUI | 192.164.0.1 10.4.0.1 | IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk | - | Active | nova | None | Running | 2 months, 2 weeks | Create Snapshot | More
TestDiskPartition | Ubuntu_14_04_x2go_45G | 192.164.0.2 10.4.0.2 | IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk | - | Active | nova | None | Running | 3 months, 2 weeks | Create Snapshot | More
centosForSify | CentOS_6.5_GUI | 192.164.0.3 10.4.0.3 | IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk | - | Shutoff | nova | None | Shutdown | 7 months | Start Instance | More
CL1_R_SERVER1 | Ubuntu_New_X2Go | 192.164.0.4 10.4.0.4 | IITKGP_xxlarge | 32GB RAM | 8 VCPU | 60.0GB Disk | - | Active | nova | None | Running | 9 months, 1 week | Create Snapshot | More
Harshit_Utkarsh_LARGE | Ubuntu_14_04_x2go_60G | 192.164.0.5 10.4.0.5 | IITKGP_xlarge | 16GB RAM | 8 VCPU | 60.0GB Disk | - | Active | nova | None | Running | 1 year, 2 months | Create Snapshot | More
cc16_test1 | Ubuntu_14_04_x2go_45G | 192.164.0.6 10.4.0.6 | IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk | - | Shutoff | nova | None | Shutdown | 1 year, 4 months | Start Instance | More
MeghadoopNewMaster | CentOS_6.5_GUI | 192.164.0.7 10.4.0.7 | IITKGP_Meghadoop_Bigger | 48GB RAM | 8 VCPU | 600.0GB Disk | - | Active | nova | None | Running | 1 year, 4 months | Create Snapshot | More
Meghadoop_18 | CentOS_6.5_GUI | 192.164.0.8 10.4.0.8 | Meghadoop_new | 8GB RAM | 4 VCPU | 90.0GB Disk | - | Active | nova | None | Running | 1 year, 5 months | Create Snapshot | More
NPTEL

Instances - Mirantis OpenStack Dashboard - Mozilla Firefox

Instances



Instances

Instance Name | Filter | Filter | + Launch Instance | Soft Reboot Instances | Terminate Instances

Instance Name	Image Name	IP Address	Size	Key Pair	Status	Availability Zone	Task	Power State	Uptime	Actions
ccTest	Centos_7_GUI	192.164.0.1 10.4.0.1	IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk	-	Active	nova	None	Running	2 months, 2 weeks	Create Snapshot More
TestDiskPartition	Ubuntu_14_04_x2go_45G	192.164.0.2 10.4.0.2	IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk	-	Active	nova	None	Running	3 months, 2 weeks	Create Snapshot More
centosForSify	CentOS_6.5_GUI	192.164.0.3 10.4.0.3	IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk	-	Shutoff	nova	None	Shutdown	7 months	Start Instance More
CL1_R_SERVER1	Ubuntu_New_X2Go	192.164.0.4 10.4.0.4	IITKGP_xxlarge | 32GB RAM | 8 VCPU | 60.0GB Disk	-	Active	nova	None	Running	9 months, 1 week	Create Snapshot More
Harshit_Utkarsh_LARGE	Ubuntu_14_04_x2go_60G	192.164.0.5 10.4.0.5	IITKGP_xlarge | 16GB RAM | 8 VCPU | 60.0GB Disk	-	Active	nova	None	Running	1 year, 2 months	Create Snapshot More
cc16_test1	Ubuntu_14_04_x2go_45G	192.164.0.6 10.4.0.6	IITKGP_regular | 4GB RAM | 2 VCPU | 45.0GB Disk	-	Shutoff	nova	None	Shutdown	1 year, 4 months	Start Instance More
MeghadoopNewMaster	CentOS_6.5_GUI	192.164.0.7 10.4.0.7	IITKGP_Meghadoop_Bigger | 48GB RAM | 8 VCPU | 600.0GB Disk	-	Active	nova	None	Running	1 year, 4 months	Create Snapshot More
Meghadoop_18	CentOS_6.5_GUI	192.164.0.8 10.4.0.8	Meghadoop_new | 8GB RAM | 4 VCPU | 90.0GB Disk	-	Active	nova	None	Running	1 year, 5 months	Create Snapshot More
Meghadoop_19	CentOS_6.5_GUI	192.164.0.9 10.4.0.9	Meghadoop_new | 8GB RAM | 4 VCPU | 90.0GB Disk	-	Active	nova	None	Running	1 year, 5 months	Create Snapshot More

NPTEL

Thank You!

NPTEL

IIT KHARAGPUR

NPTEL ONLINE
CERTIFICATION COURSES

CLOUD COMPUTING

CREATE A PYTHON WEB APP IN MICROSOFT AZURE:

PROF. SOUMYA K. GHOSH
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
IIT KHARAGPUR

NPTEL

Microsoft Azure : An overview

- Microsoft Azure is a growing collection of integrated cloud services which developers and IT professionals use to build, deploy and manage applications through a global network of datacenters.

- With Azure, developers get the freedom to build and deploy wherever they want, using the tools, applications and frameworks of their choice.

NPTEL

Ref: https://azure.microsoft.com/en-in/

Deploy anywhere with your choice of tools

- Connecting cloud and on-premises with consistent hybrid cloud capabilities and using open source technologies

NPTEL

Ref: https://azure.microsoft.com/en-in/

Protect your business with the most trusted cloud

- Azure helps to protect assets through a rigorous methodology and focus on security, privacy, compliance and transparency.

NPTEL

Ref: https://azure.microsoft.com/en-in/

Accelerate app innovation

- Build simple to complex projects within a consistent portal experience using deeply-integrated cloud services, so developers can rapidly develop, deploy and manage their apps.

Ref: https://azure.microsoft.com/en-in/

NPTEL

Power decisions and apps with insights

- Uncover business insights with advanced analytics and data services for both traditional and new data sources. Detect anomalies, predict behaviors and recommend actions for your business.

Add intelligence to your apps

Predict and respond proactively

Support your strategy with any data

NPTEL

Ref: https://azure.microsoft.com/en-in/

In this demo, we are going to present the creation of a python web app in Microsoft Azure.

NPTEL

Ref: https://azure.microsoft.com/en-in/

Azure Web Apps

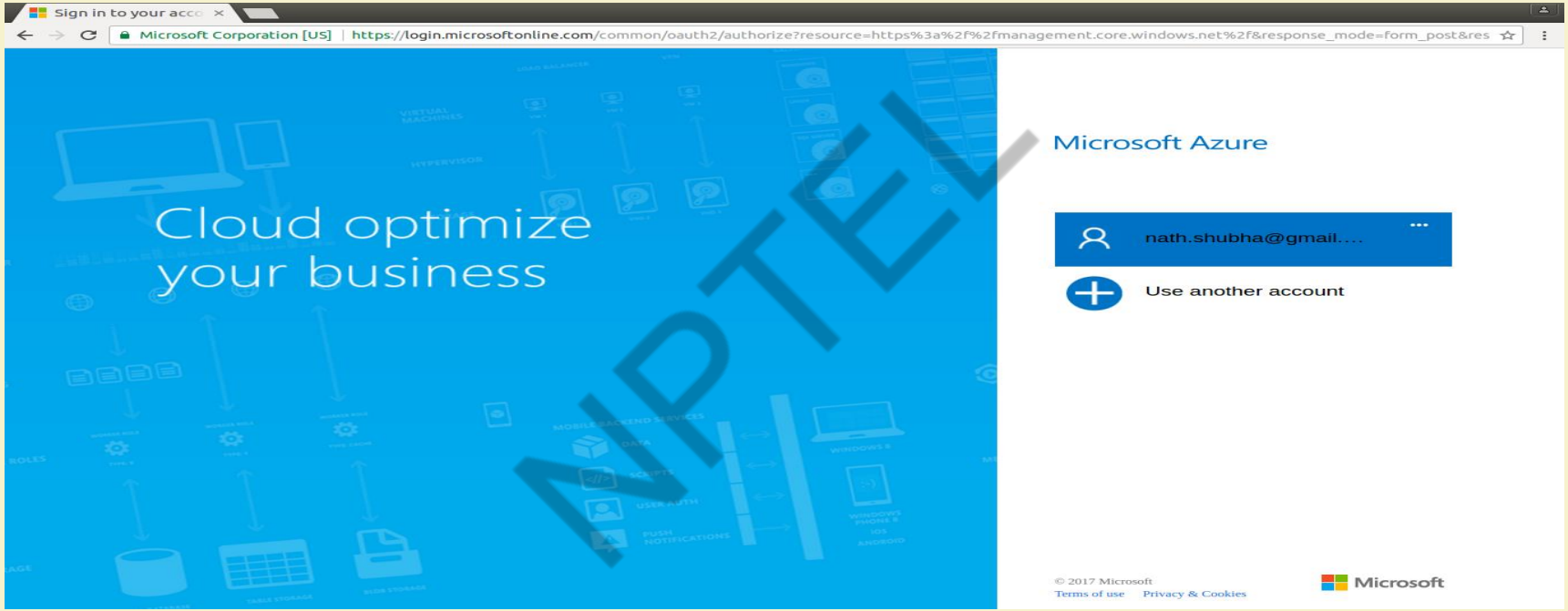
- Highly scalable, Self-patching web hosting service.

- Prerequisites
  - ✓ To complete this demo:
    - ➔ Install Git
    - ➔ Install Python

NPTEL

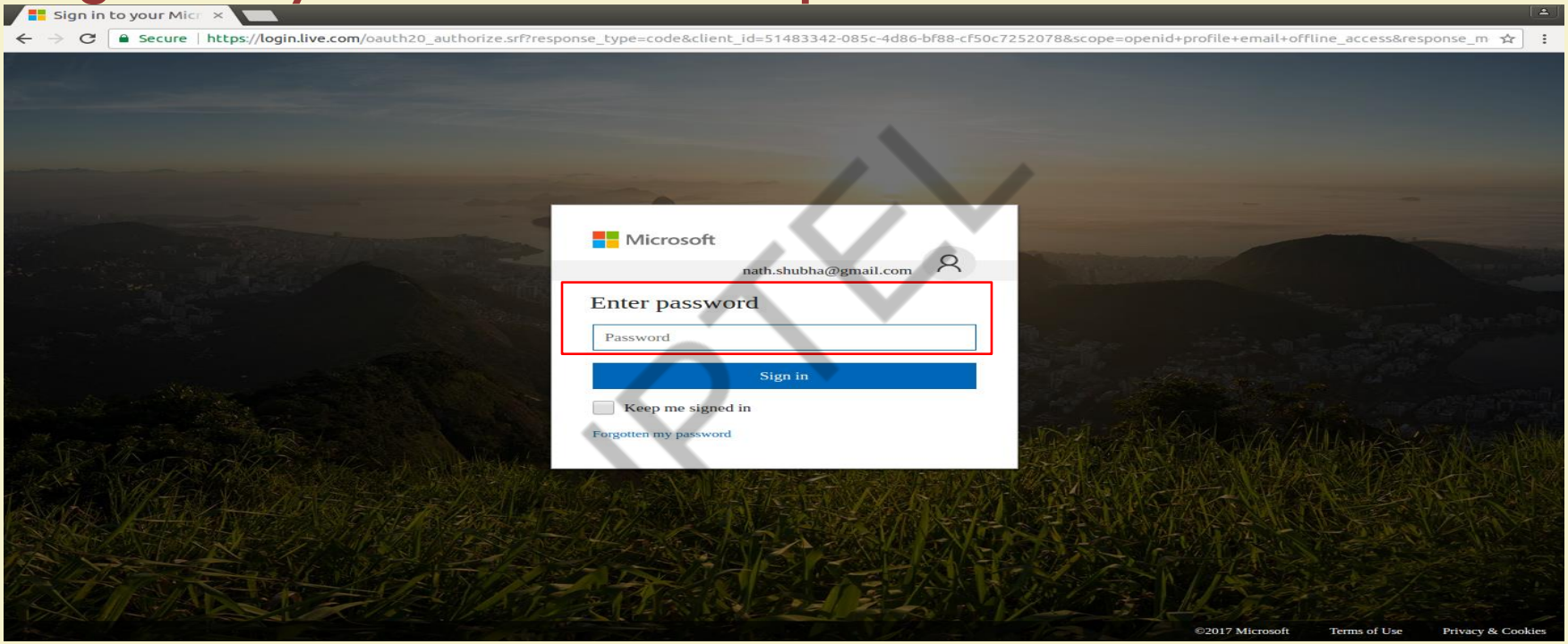
Ref: https://azure.microsoft.com/en-in/

Go to https://portal.azure.com/and login with your username and password



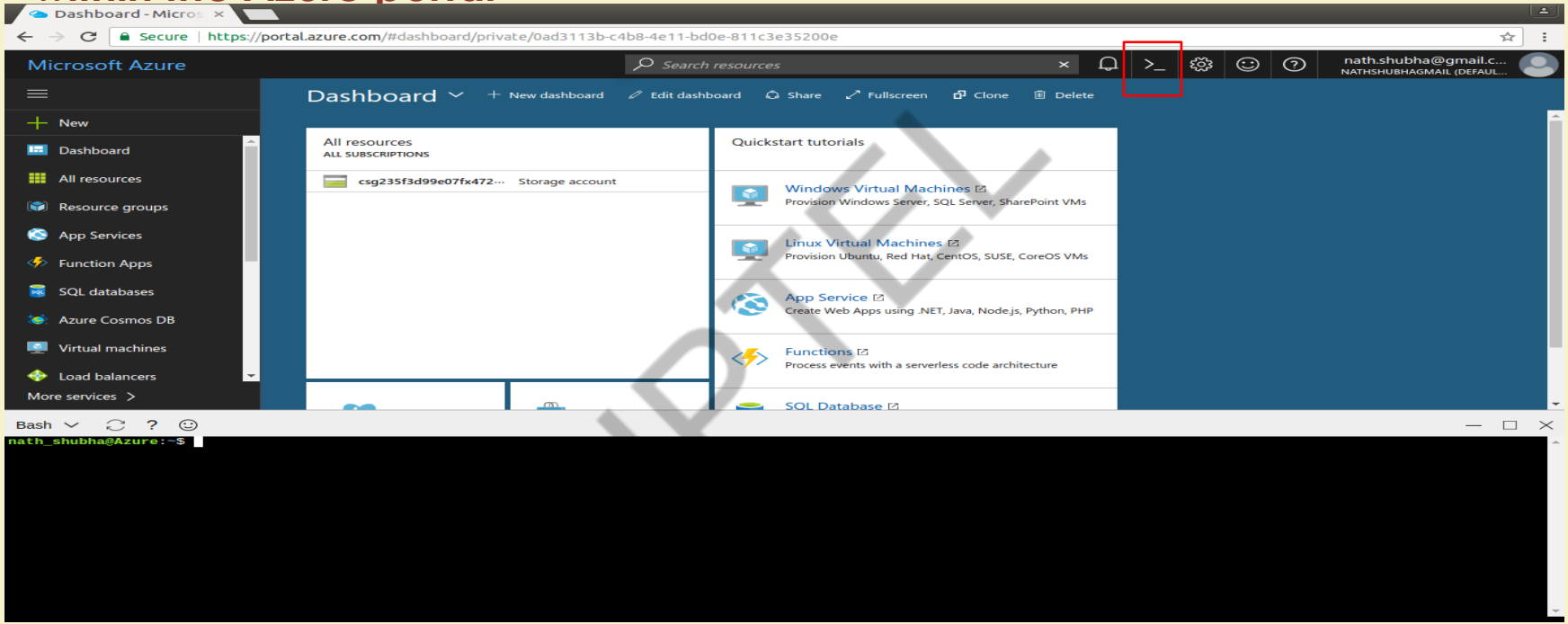
Ref: https://docs.microsoft.com/en-us/azure/app-service-web/app-service-web-get-started-python

Login with your username and password



Ref: https://docs.microsoft.com/en-us/azure/app-service-web/app-service-web-get-started-python

Launch Azure Cloud Shell : It is a free bash shell that we can directly use within the Azure portal



Ref: https://docs.microsoft.com/en-us/azure/app-service-web/app-service-web-get-started-python

Download the sample

In a terminal window, run the following command to clone the sample app repository to your local machine.

NPTEL

Ref: https://docs.microsoft.com/en-us/azure/app-service-web/app-service-web-get-started-python

Change to the directory that contains the sample code

NPTEL

Ref: https://docs.microsoft.com/en-us/azure/app-service-web/app-service-web-get-started-python

Install flask

```
root@shubha-OptiPlex-9020: /home/shubha/python-docs-hello-world
root@shubha-OptiPlex-9020:/home/shubha/python-docs-hello-world# pip install flask
Collecting flask
  Downloading Flask-0.12.2-py2.py3-none-any.whl (83kB)
    100% |████████████████████████████████| 92kB 140kB/s
Collecting itsdangerous>=0.21 (from flask)
  Downloading itsdangerous-0.24.tar.gz (46kB)
    100% |████████████████████████████████| 51kB 4.3MB/s
Collecting click>=2.0 (from flask)
  Downloading click-6.7-py2.py3-none-any.whl (71kB)
    100% |████████████████████████████████| 71kB 322kB/s
Collecting Werkzeug>=0.7 (from flask)
  Downloading Werkzeug-0.12.2-py2.py3-none-any.whl (312kB)
    100% |████████████████████████████████| 317kB 408kB/s
Collecting Jinja2>=2.4 (from flask)
  Downloading Jinja2-2.9.6-py2.py3-none-any.whl (340kB)
    100% |████████████████████████████████| 348kB 389kB/s
Collecting MarkupSafe>=0.23 (from Jinja2>=2.4->flask)
  Downloading MarkupSafe-1.0.tar.gz
Building wheels for collected packages: itsdangerous, MarkupSafe
  Running setup.py bdist_wheel for itsdangerous ... done
  Stored in directory: /root/.cache/pip/wheels/fc/a8/66/24d655233c757e178d45dea2de22a04c6d92766abfb741129a
  Running setup.py bdist_wheel for MarkupSafe ... done
  Stored in directory: /root/.cache/pip/wheels/88/a7/30/e39a54a87bcbe25308fa3ca64e8ddc75d9b3e5afa21ee32d57
Successfully built itsdangerous MarkupSafe
Installing collected packages: itsdangerous, click, Werkzeug, MarkupSafe, Jinja2, flask
Successfully installed Jinja2-2.9.6 MarkupSafe-1.0 Werkzeug-0.12.2 click-6.7 flask-0.12.2 itsdangerous-0.24
You are using pip version 8.1.1, however version 9.0.1 is available.
You should consider upgrading via the 'pip install --upgrade pip' command.
root@shubha-OptiPlex-9020:/home/shubha/python-docs-hello-world#
```

Ref: https://docs.microsoft.com/en-us/azure/app-service-web/app-service-web-get-started-python

NPTEL

Run the app locally

```
root@shubha-OptiPlex-9020: /home/shubha/python-docs-hello-world
root@shubha-OptiPlex-9020:/home/shubha/python-docs-hello-world# python main.py
 * Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)
```

NPTEL

Ref: https://docs.microsoft.com/en-us/azure/app-service-web/app-service-web-get-started-python

Open a web browser, and navigate to the sample app at http://localhost:5000. You can see the Hello World message from the sample app displayed in the page.

NPTEL

Ref: https://docs.microsoft.com/en-us/azure/app-service-web/app-service-web-get-started-python

Configure a deployment user using the command

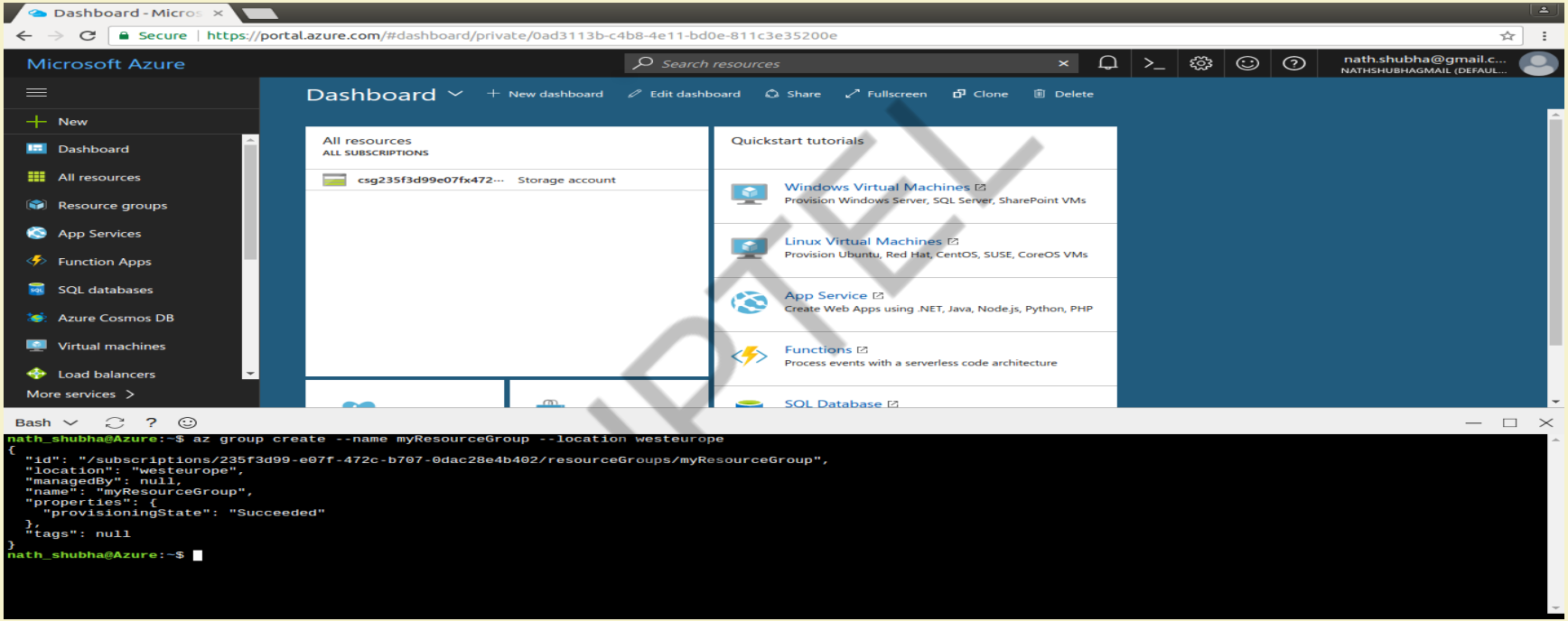
- A deployment user is required for FTP and local Git deployment to a web app.

az webapp deployment user set --user-name <username> --password <password>

NPTEL

Ref: https://docs.microsoft.com/en-us/azure/app-service-web/app-service-web-get-started-python

Create a resource group: A resource group is a logical container into which Azure resources like web apps, databases, and storage accounts are deployed and managed.



Ref: https://docs.microsoft.com/en-us/azure/app-service-web/app-service-web-get-started-python

Create an Azure App Service plan

- An App Service plan specifies the location, size, and features of the web server farm that hosts your app. You can save money when hosting multiple apps by configuring the web apps to share a single App Service plan.

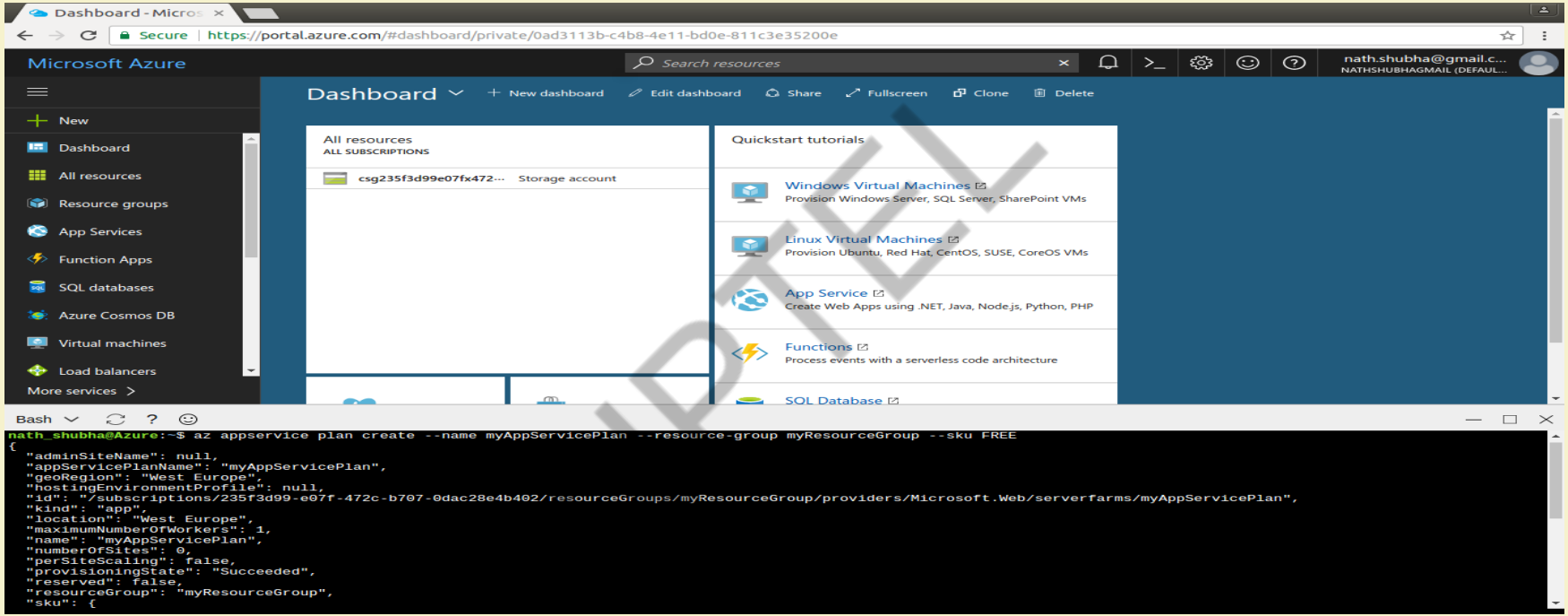
- App Service plans define:

    - Region (for example: North Europe, East US, or Southeast Asia)
    - Instance size (small, medium, or large)
    - Scale count (1 to 20 instances)
    - SKU (Free, Shared, Basic, Standard, or Premium)

Ref: https://docs.microsoft.com/en-us/azure/app-service-web/app-service-web-get-started-python

NPTEL

Create an Azure App Service plan



Ref: https://docs.microsoft.com/en-us/azure/app-service-web/app-service-web-get-started-python

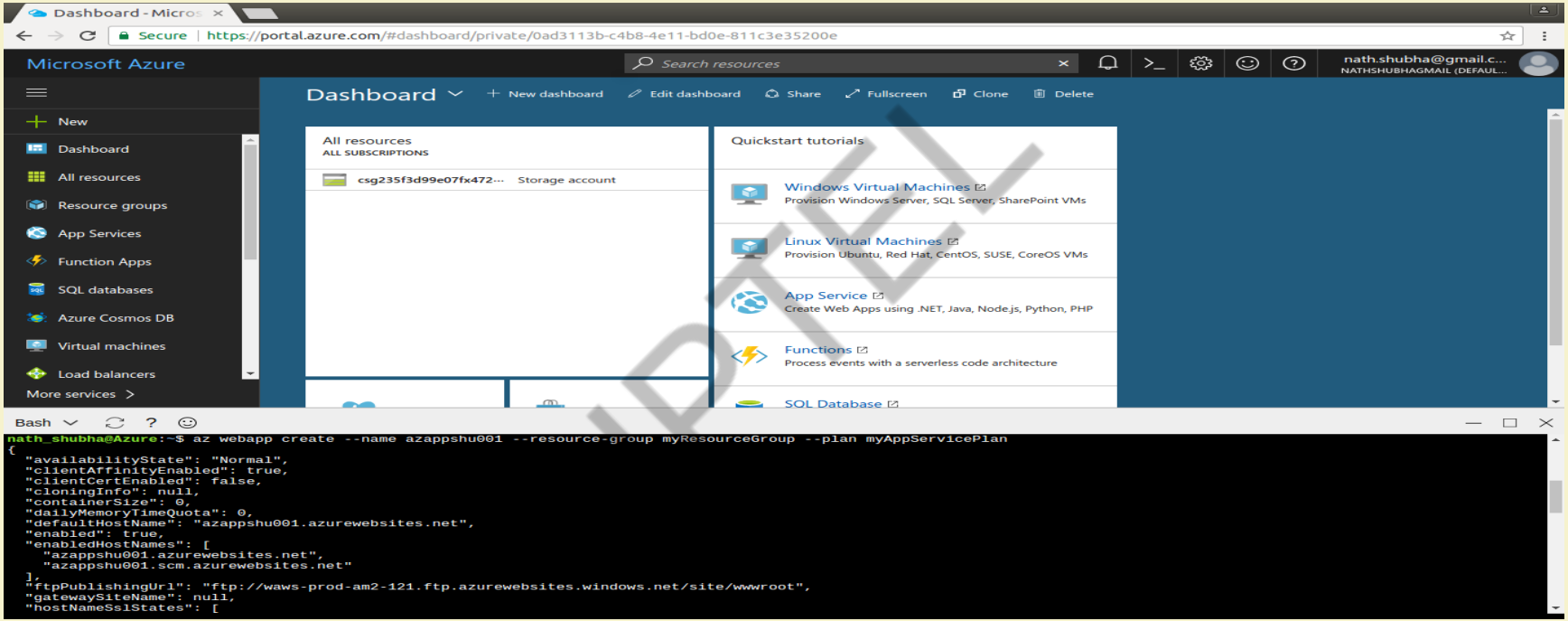
Create a web app

- The web app provides a hosting space for your code and provides a URL to view the deployed app.

NPTEL

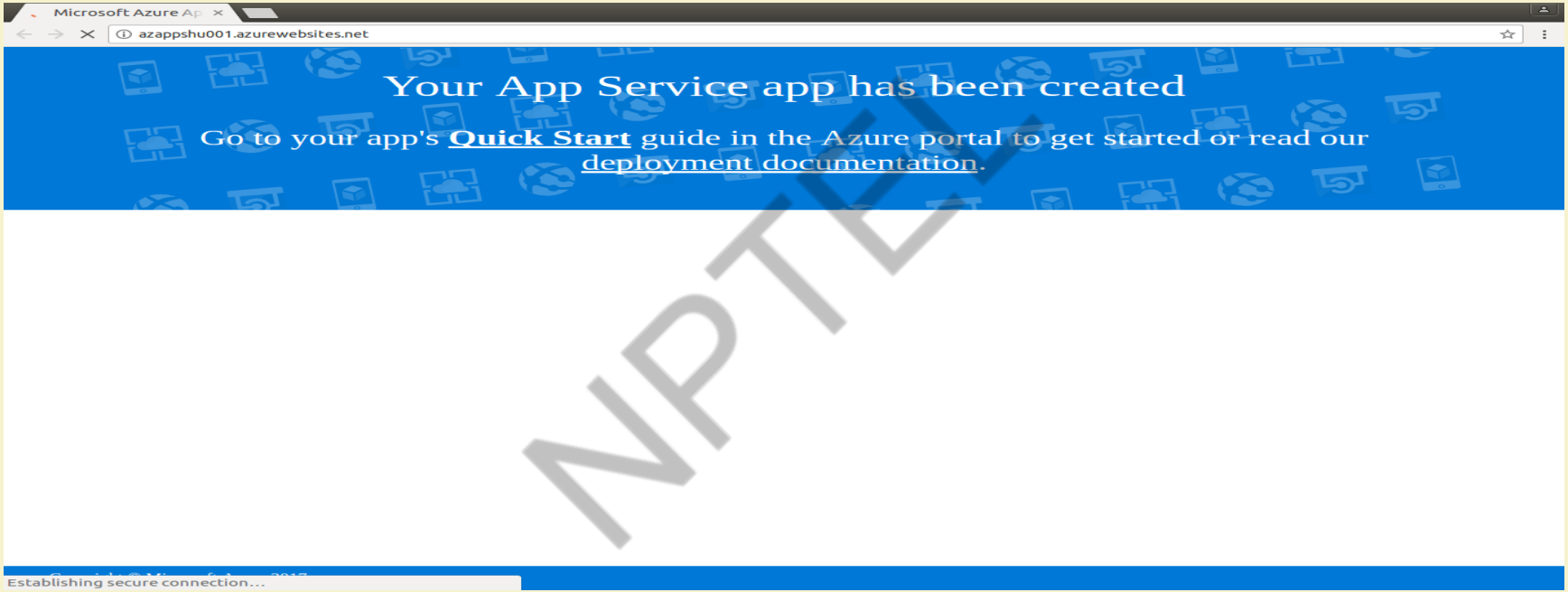
Ref: https://docs.microsoft.com/en-us/azure/app-service-web/app-service-web-get-started-python

Create a web app



Ref: https://docs.microsoft.com/en-us/azure/app-service-web/app-service-web-get-started-python

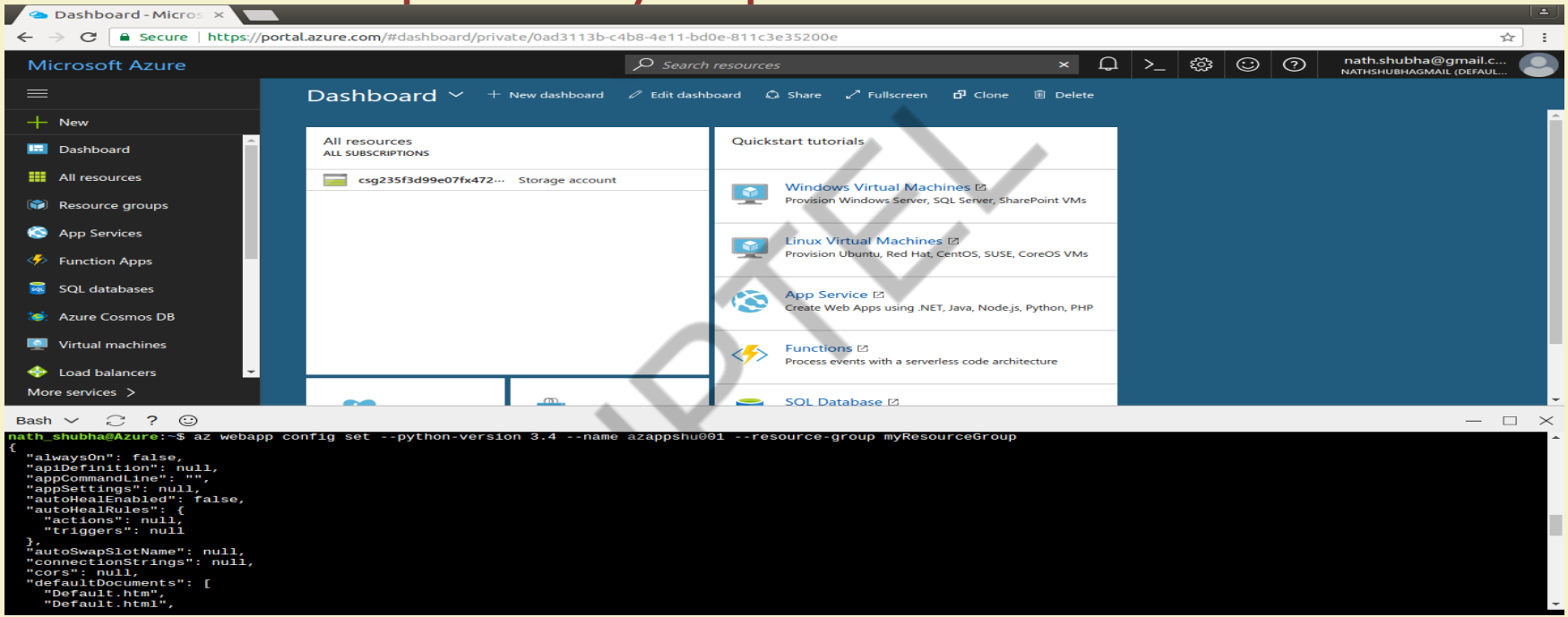
Browse to the site azappshu001.azurewebsites.net to see your newly created web app.



Ref: https://docs.microsoft.com/en-us/azure/app-service-web/app-service-web-get-started-python

NPTEL

Configure to use Python: Setting the Python version this way uses a default container provided by the platform.



Ref: https://docs.microsoft.com/en-us/azure/app-service-web/app-service-web-get-started-python

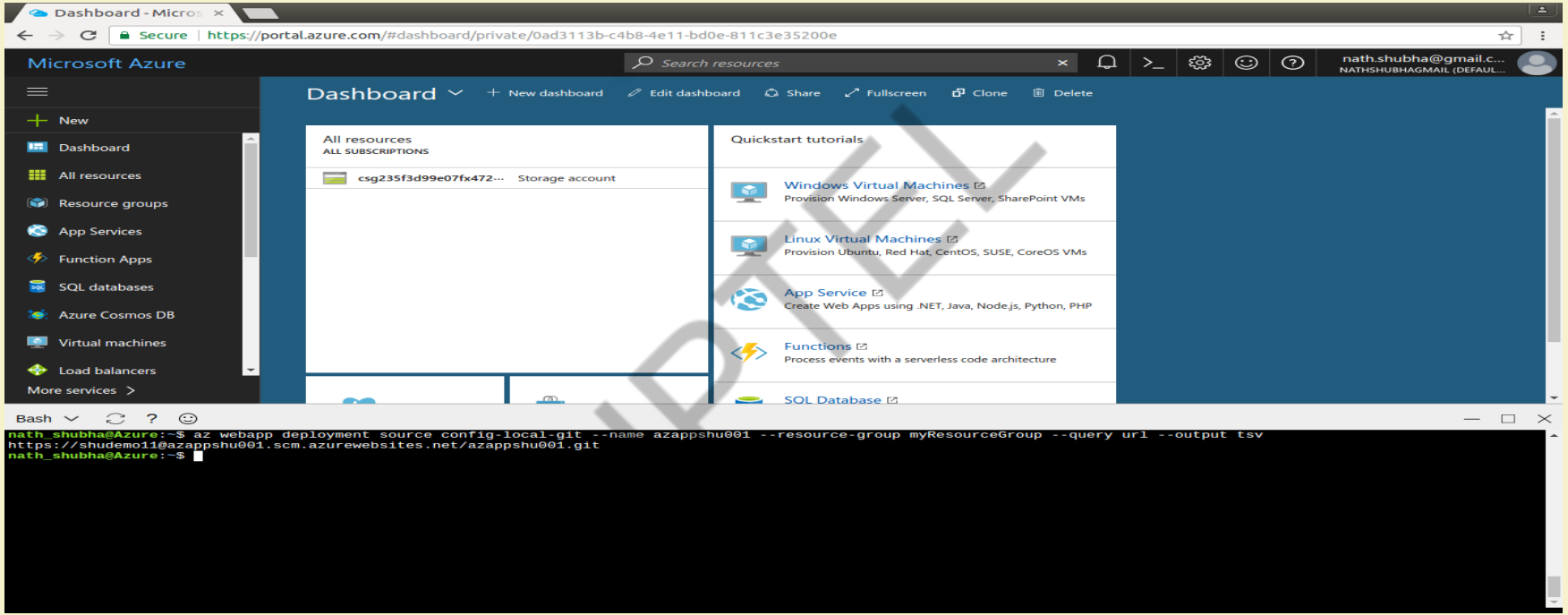
Configure local Git deployment

- App Service supports several ways to deploy content to a web app, such as FTP, local Git, GitHub, Visual Studio Team Services, and Bitbucket. For this quickstart, you deploy by using local Git. That means you deploy by using a Git command to push from a local repository to a repository in Azure.

NPTEL

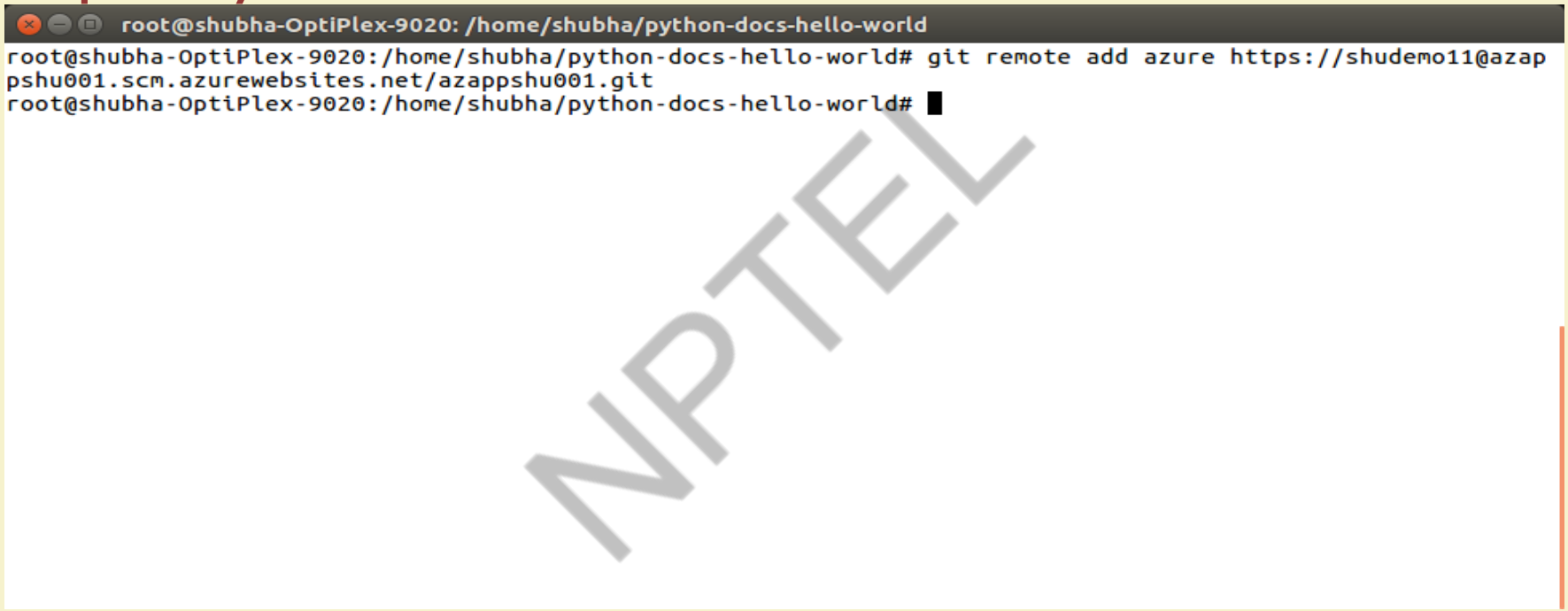
Ref: https://docs.microsoft.com/en-us/azure/app-service-web/app-service-web-get-started-python

Configure local Git deployment



Ref: https://docs.microsoft.com/en-us/azure/app-service-web/app-service-web-get-started-python

Push to Azure from Git: Add an Azure remote to your local Git repository.



NPTEL

Ref: https://docs.microsoft.com/en-us/azure/app-service-web/app-service-web-get-started-python

Push to the Azure remote to deploy your app. You are prompted for the password you created earlier when you created the deployment user. Make sure that you enter the password you created in Configure a deployment user, not the password you use to log in to the Azure portal.

```
root@shubha-OptiPlex-9020: /home/shubha/python-docs-hello-world
root@shubha-OptiPlex-9020:/home/shubha/python-docs-hello-world# git push azure master
Password for 'https://shudemo11@azappshu001.scm.azurewebsites.net':
Counting objects: 18, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (16/16), done.
Writing objects: 100% (18/18), 4.31 KiB | 0 bytes/s, done.
Total 18 (delta 4), reused 0 (delta 0)
remote: Updating branch 'master'.
remote: Updating submodules.
remote: Preparing deployment for commit id '44e74fe7dd'.
remote: Generating deployment script.
remote: Generating deployment script for python Web Site
remote: Generated deployment script files
remote: Running deployment command...
remote: Handling python deployment.
remote: KuduSync.NET from: 'D:\home\site\repository' to: 'D:\home\site\wwwroot'
remote: Deleting file: 'hostingstart.html'
remote: Copying file: '.gitignore'
remote: Copying file: 'LICENSE'
remote: Copying file: 'main.py'
remote: Copying file: 'README.md'
remote: Copying file: 'requirements.txt'
remote: Copying file: 'virtualenv_proxy.py'
remote: Copying file: 'web.2.7.config'
remote: Copying file: 'web.3.4.config'
remote: Detected requirements.txt. You can skip Python specific steps with a .skipPythonDeployment file.
remote: Detecting Python runtime from site configuration
remote: Detected python-3.4
remote: Creating python-3.4 virtual environment.
remote: ......................
remote: Pip install requirements.
remote: Downloading/unpacking Flask==0.12.1 (from -r requirements.txt (line 1))
remote: Downloading/unpacking itsdangerous>=0.21 (from Flask==0.12.1->-r requirements.txt (line 1))
remote:   Running setup.py (path:D:\home\site\wwwroot\env\build\itsdangerous\setup.py) egg_info for package
 itsdangerous
remote:
remote:     warning: no previously-included files matching '*' found under directory 'docs\_build'
remote: Downloading/unpacking Jinja2>=2.4 (from Flask==0.12.1->-r requirements.txt (line 1))
remote: Downloading/unpacking click>=2.0 (from Flask==0.12.1->-r requirements.txt (line 1))
remote: Downloading/unpacking Werkzeug>=0.7 (from Flask==0.12.1->-r requirements.txt (line 1))
remote: Downloading/unpacking MarkupSafe>=0.23 (from Jinja2>=2.4->Flask==0.12.1->-r requirements.txt (line
1))
remote:   Downloading MarkupSafe-1.0.tar.gz
remote:   Running setup.py (path:D:\home\site\wwwroot\env\build\MarkupSafe\setup.py) egg_info for package M
arkupSafe
remote:
remote: Installing collected packages: Flask, itsdangerous, Jinja2, click, Werkzeug, MarkupSafe
remote:   Running setup.py install for itsdangerous
remote:
```

Ref: https://docs.microsoft.com/en-us/azure/app-service-web/app-service-web-get-started-python

NPTEL

Browse to the app at azappshu001.azurewebsites.net

NPTEL

Ref: https://docs.microsoft.com/en-us/azure/app-service-web/app-service-web-get-started-python

Update and redeploy the code

NPTEL

Ref: https://docs.microsoft.com/en-us/azure/app-service-web/app-service-web-get-started-python

Using a local text editor, open the main.py file in the Python app, and make a small change

root@shubha-OptiPlex-9020: /home/shubha/python-docs-hello-world

```
  GNU nano 2.5.3                    File: main.py                         Modified

from flask import Flask
app = Flask(__name__)

@app.route('/')
def hello_world():
  return 'Welcome to the NPTEL course on Cloud Computing!!'

if __name__ == '__main__':
  app.run()

^G Get Help    ^O Write Out   ^W Where Is    ^K Cut Text    ^J Justify     ^C Cur Pos     ^Y Prev Page
^X Exit        ^R Read File   ^\ Replace     ^U Uncut Text  ^T To Linter   ^_ Go To Line  ^V Next Page
```

NPTEL

Ref: https://docs.microsoft.com/en-us/azure/app-service-web/app-service-web-get-started-python

Commit your changes in Git

```
root@shubha-OptiPlex-9020: /home/shubha/python-docs-hello-world
root@shubha-OptiPlex-9020:/home/shubha/python-docs-hello-world# git commit -am "updated output"
[master 17a5143] updated output
 1 file changed, 1 insertion(+), 1 deletion(-)
root@shubha-OptiPlex-9020:/home/shubha/python-docs-hello-world#
```

NPTEL

Ref: https://docs.microsoft.com/en-us/azure/app-service-web/app-service-web-get-started-python

Push the code changes to Azure

```
root@shubha-OptiPlex-9020: /home/shubha/python-docs-hello-world
root@shubha-OptiPlex-9020:/home/shubha/python-docs-hello-world# git push azure master
Password for 'https://shudemo11@azappshu001.scm.azurewebsites.net':
Counting objects: 3, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 396 bytes | 0 bytes/s, done.
Total 3 (delta 1), reused 0 (delta 0)
remote: Updating branch 'master'.
remote: Updating submodules.
remote: Preparing deployment for commit id '17a51436e4'.
remote: Generating deployment script.
remote: Running deployment command...
remote: Handling python deployment.
remote: KuduSync.NET from: 'D:\home\site\repository' to: 'D:\home\site\wwwroot'
remote: Copying file: 'main.py'
remote: Detected requirements.txt.  You can skip Python specific steps with a .skipPythonDeployment file.
remote: Detecting Python runtime from site configuration
remote: Detected python-3.4
remote: Found compatible virtual environment.
remote: Pip install requirements.
remote: Requirement already satisfied (use --upgrade to upgrade): Flask==0.12.1 in d:\home\site\wwwroot\env
\lib\site-packages (from -r requirements.txt (line 1))
remote: Cleaning up...
remote: Overwriting web.config with web.3.4.config
```

NPTEL

Ref: https://docs.microsoft.com/en-us/azure/app-service-web/app-service-web-get-started-python

Once deployment has completed, refresh the page azappshu001.azurewebsites.net

NPTEL

Ref: https://docs.microsoft.com/en-us/azure/app-service-web/app-service-web-get-started-python

References

1. https://docs.microsoft.com/en-us/azure/app-service-web/app-service-web-get-started-python

NPTEL

Thank You!!

NPTEL

IIT KHARAGPUR

NPTEL ONLINE
CERTIFICATION COURSES

Google Cloud Platform (GCP)

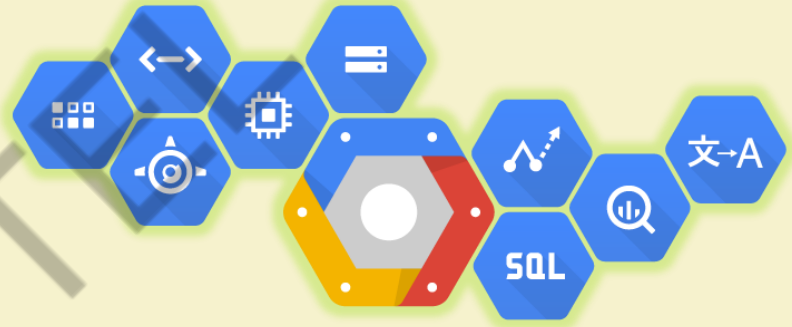
Prof. Soumya K Ghosh
Department of Computer Science and Engineering
IIT KHARAGPUR

NPTEL

What's Google Cloud Platform?

- **Google Cloud Platform** is a set of services that enables developers to **build**, **test** and **deploy** applications on Google's reliable infrastructure.

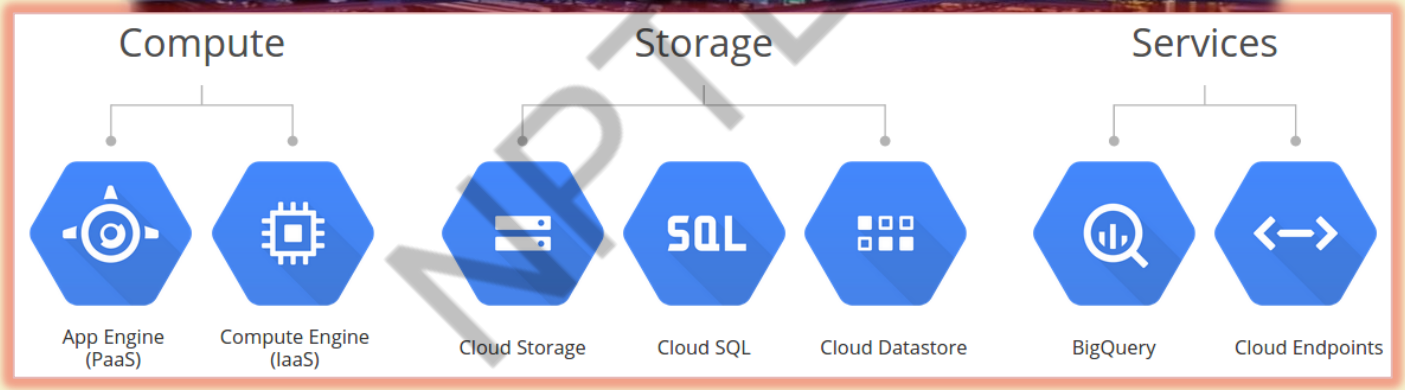
- **Google cloud platform** is a set of modular cloud-based services that allow you to create anything from simple websites to complex applications



Google Cloud Platform

NPTEL

Google Cloud Platform Services!



NPTEL

Why Google Cloud Platform?

Run on Google's Infrastructure

Build on the same infrastructure that allows Google to return billions of search results in milliseconds, serve 6 billion hours of YouTube video per month and provide storage for 425 million Gmail users.

- ✓ Global Network
- ✓ Redundancy
- ✓ Innovative Infrastructure

NPTEL

Why Google Cloud Platform? (contd..)

Focus on your product

Rapidly develop, deploy and iterate your applications without worrying about system administration. Google manages your application, database and storage servers so you don't have to.

- ✓ Managed services
- ✓ Developer Tools and SDKs
- ✓ Console and Administration

NPTEL

Why Google Cloud Platform? (contd..)

Mix and Match Services

Virtual machines. Managed platform. Blob storage. Block storage. NoSQL datastore. MySQL database. Big Data analytics. Google Cloud Platform has all the services your application architecture needs.

- ✓ Compute
- ✓ Storage
- ✓ Services

NPTEL

Why Google Cloud Platform? (contd..)

Scale to millions of users

Applications hosted on Cloud Platform can automatically scale up to handle the most demanding workloads and scale down when traffic subsides. You pay only for what you use.

Scale-up: Cloud Platform is designed to scale like Google's own products, even when you experience a huge traffic spike. Managed services such as App Engine or Cloud Datastore give you auto-scaling that enables your application to grow with your users.

Scale-down: Just as Cloud Platform allows you to scale-up, managed services also scale down. You don't pay for computing resources that you don't need.

NPTEL

Why Google Cloud Platform? (contd..)

Performance you can count on

Google's compute infrastructure gives you consistent CPU, memory and disk performance. The network and edge cache serve responses rapidly to your users across the world.

- ✓ CPU, Memory and Disk
- ✓ Global Network
- ✓ Transparent maintenance

NPTEL

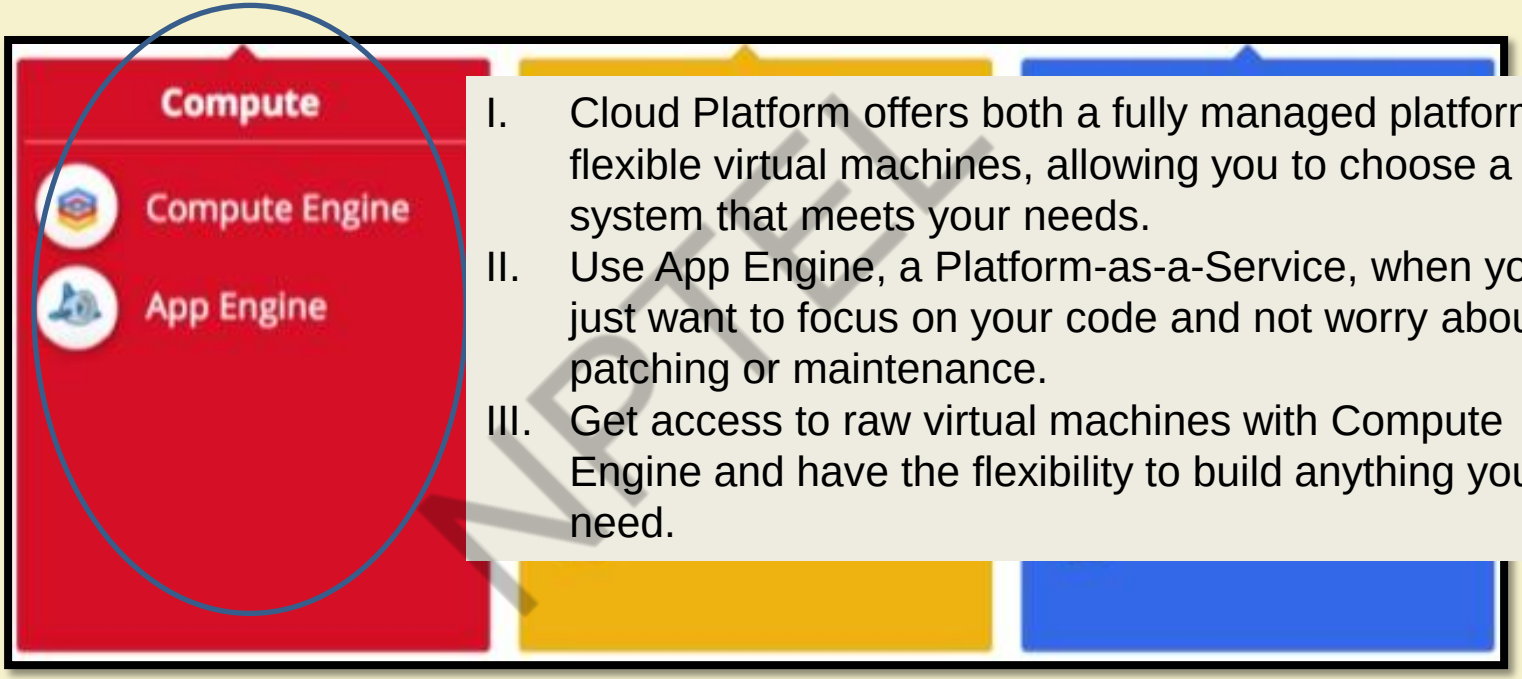
Why Google Cloud Platform? (contd..)

Get the support you need

With a worldwide community of users, partner ecosystem and premium support packages, Google provides a full range of resources to help you get started and grow.

NPTEL

Google Cloud Platform Services



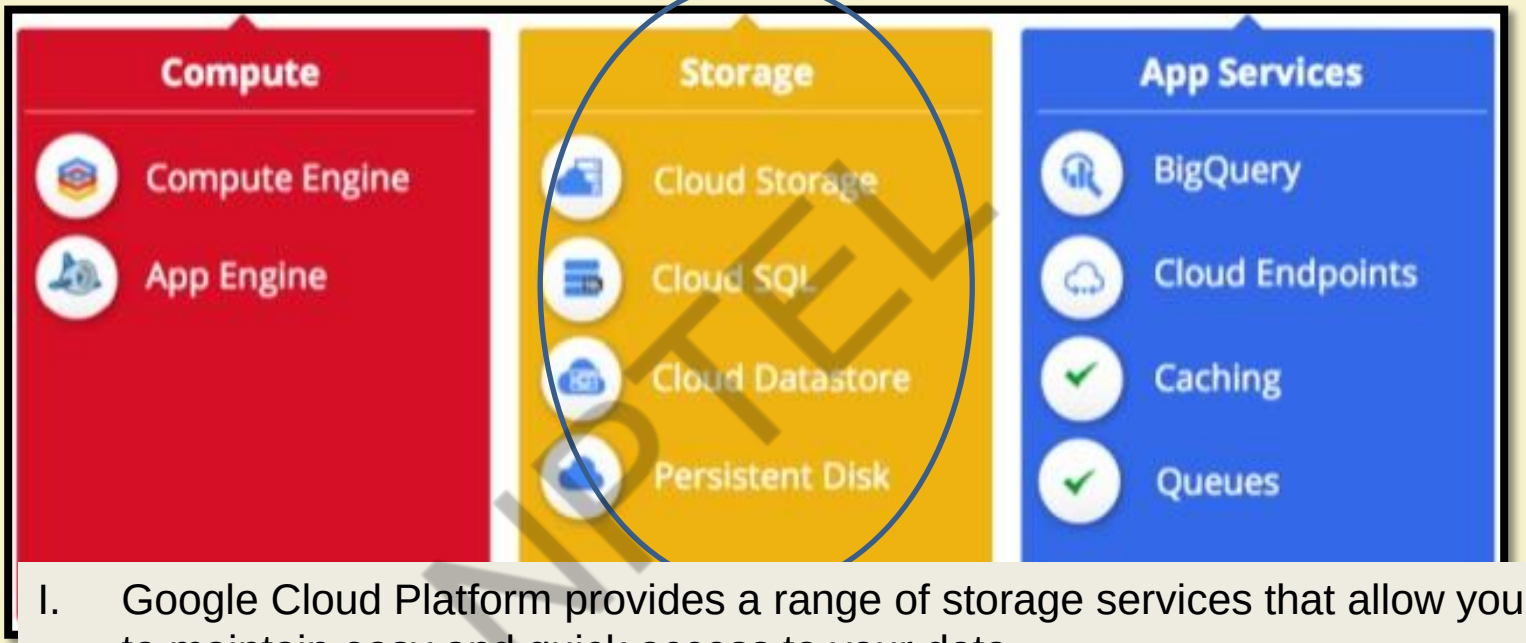
I. Cloud Platform offers both a fully managed platform and flexible virtual machines, allowing you to choose a system that meets your needs.

II. Use App Engine, a Platform-as-a-Service, when you just want to focus on your code and not worry about patching or maintenance.

III. Get access to raw virtual machines with Compute Engine and have the flexibility to build anything you need.

NPTEL

Google Cloud Platform Services

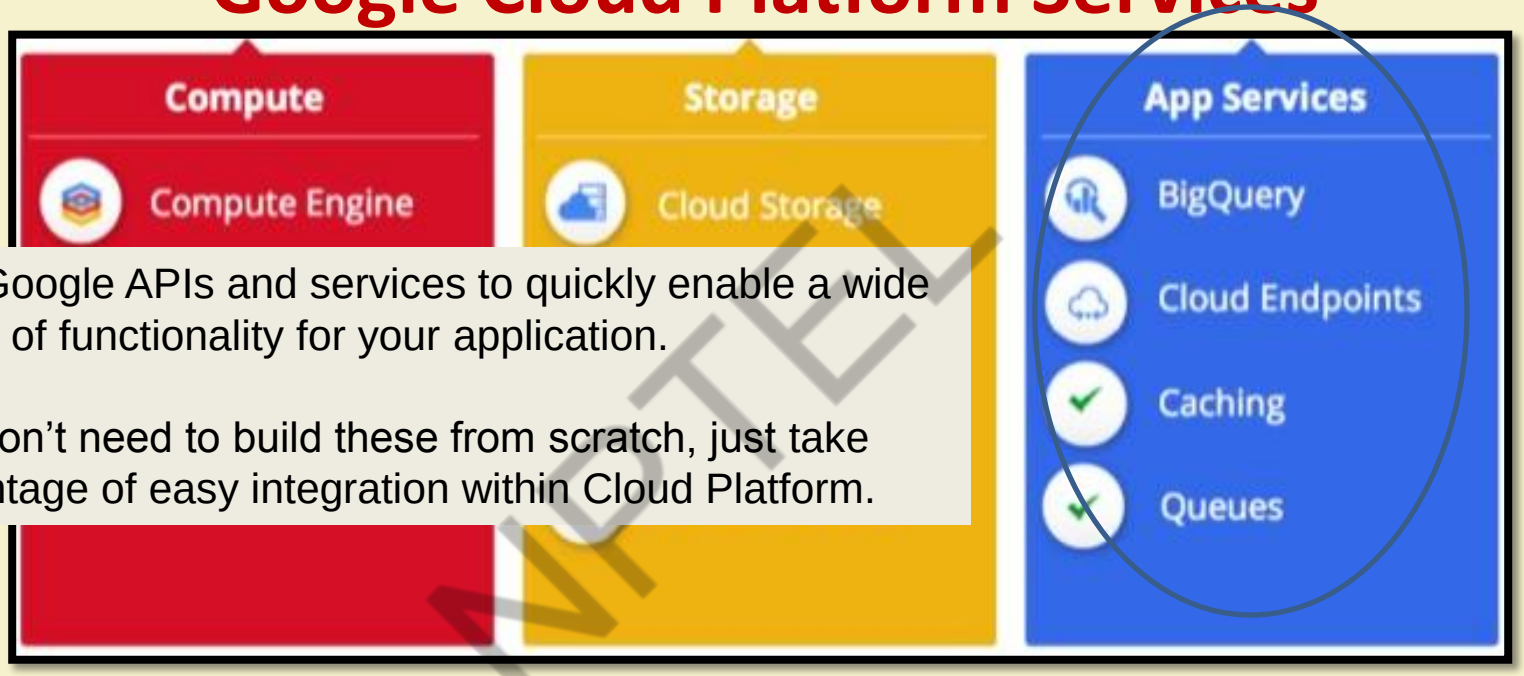


I. Google Cloud Platform provides a range of storage services that allow you to maintain easy and quick access to your data.

II. With **Cloud SQL** and **Datastore** you get MySQL or NoSQL databases, while **Cloud Storage** provides flexible object storage with global edge caching.

NPTEL

Google Cloud Platform Services



I. Use Google APIs and services to quickly enable a wide range of functionality for your application.

II. You don't need to build these from scratch, just take advantage of easy integration within Cloud Platform.

NPTEL

Google Cloud Platform Services – from User end!

- Consider to migrate your web application to Google Cloud Platform for better performance using **GoogleAppEngine.**
- Your application should go wherever your users go: Scale your application using **GoogleCloudEndpoints**.
- Integrate Google's services into your Application using **GoogleAPIs**.

NPTEL

Example 1: Host your *web-page* in *Google Cloud Platform*

Example 2: Build your *web-app* using *Google App Engine*

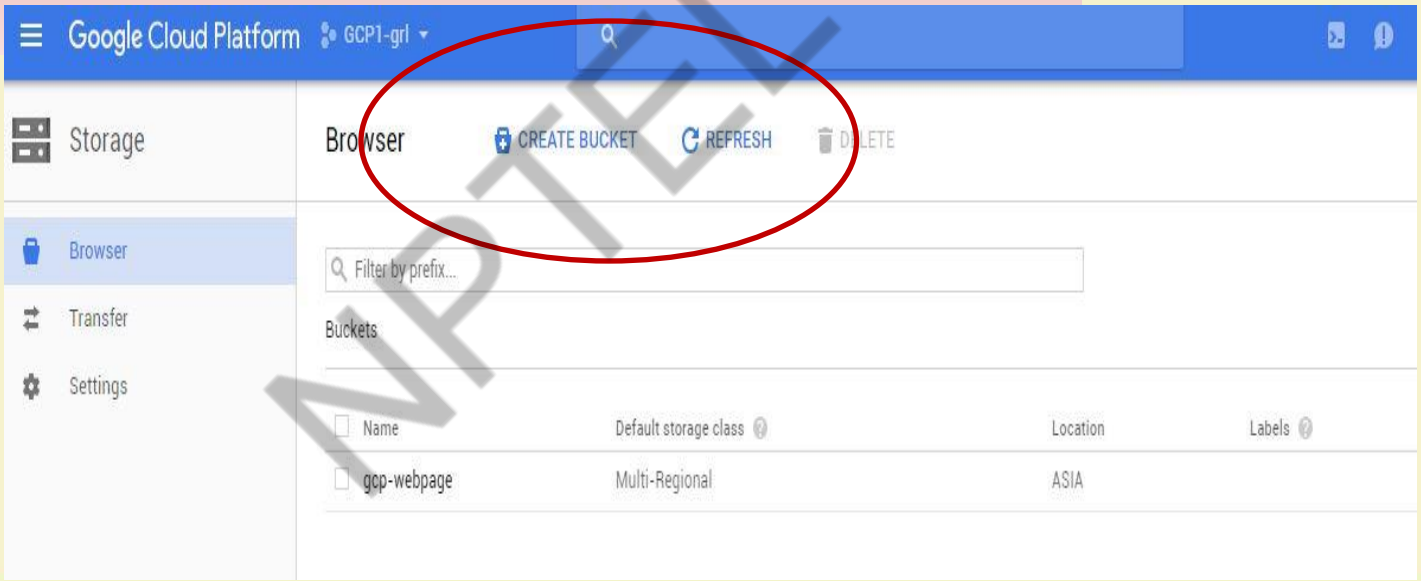
NPTEL

Example 1: Host your *web-page* in *Google Cloud Platform*

NPTEL

An easy example: Host your *web-page* inside *Google Cloud Platform*

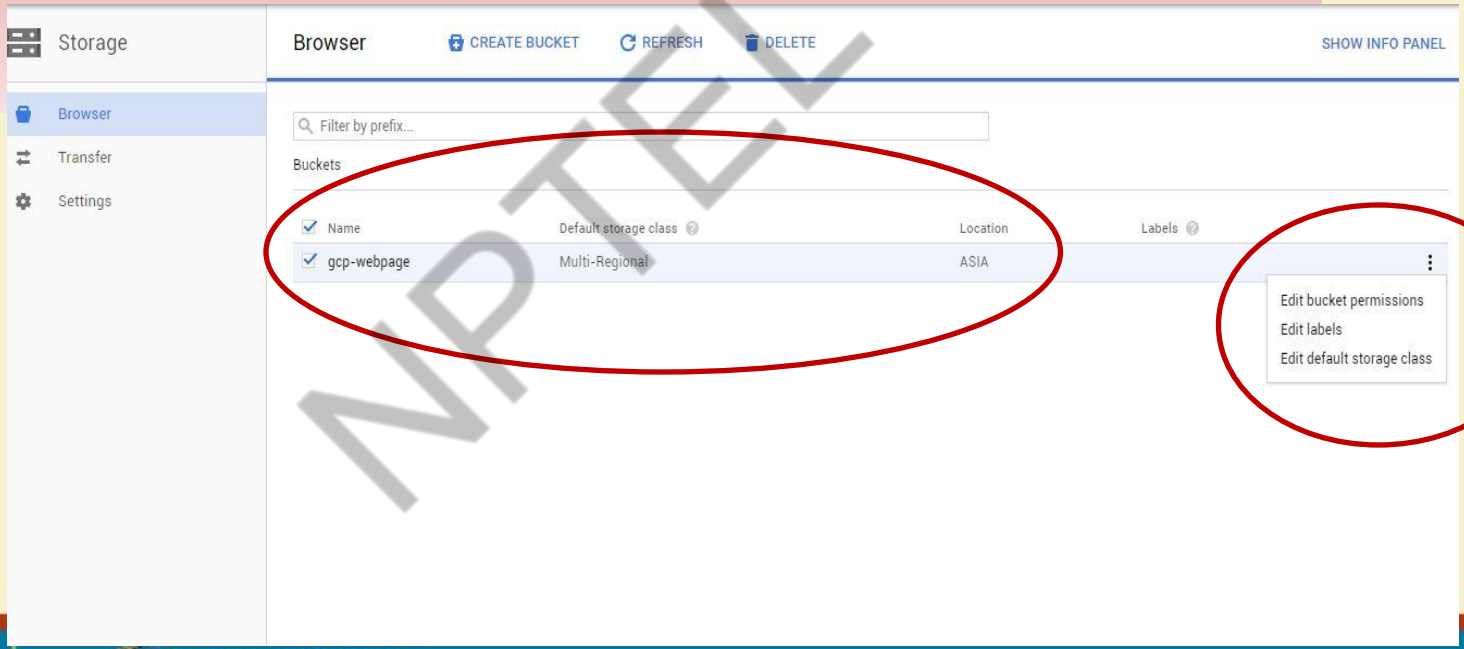
i) Open the Cloud Storage browser in the Google Cloud Platform Console & click on ***Create Bucket***



NPTEL

An easy example: Host your *web-page* inside *Google Cloud Platform*

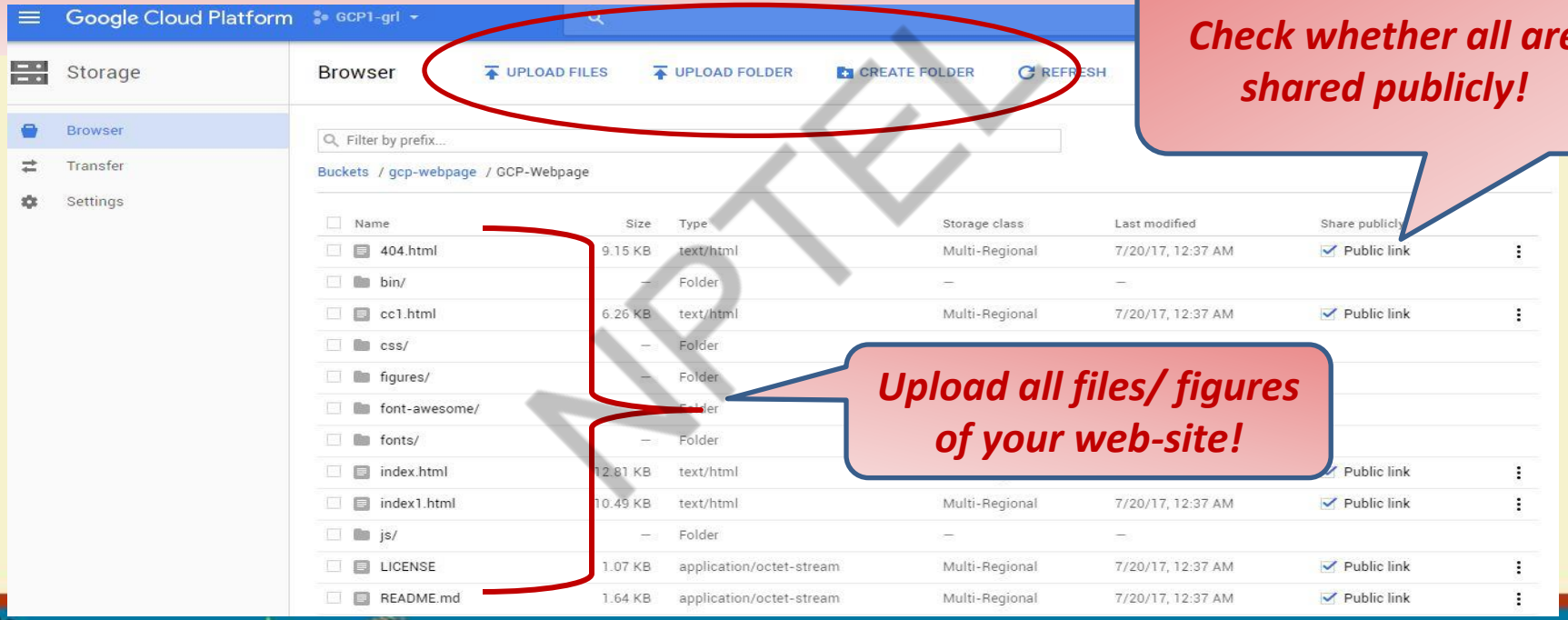
ii) In the list of buckets, find the bucket you created.
And Click the more actions icon next to the bucket and select **Edit configuration**.



NPTEL

An easy example: Host your *web-page* inside *Google Cloud Platform*

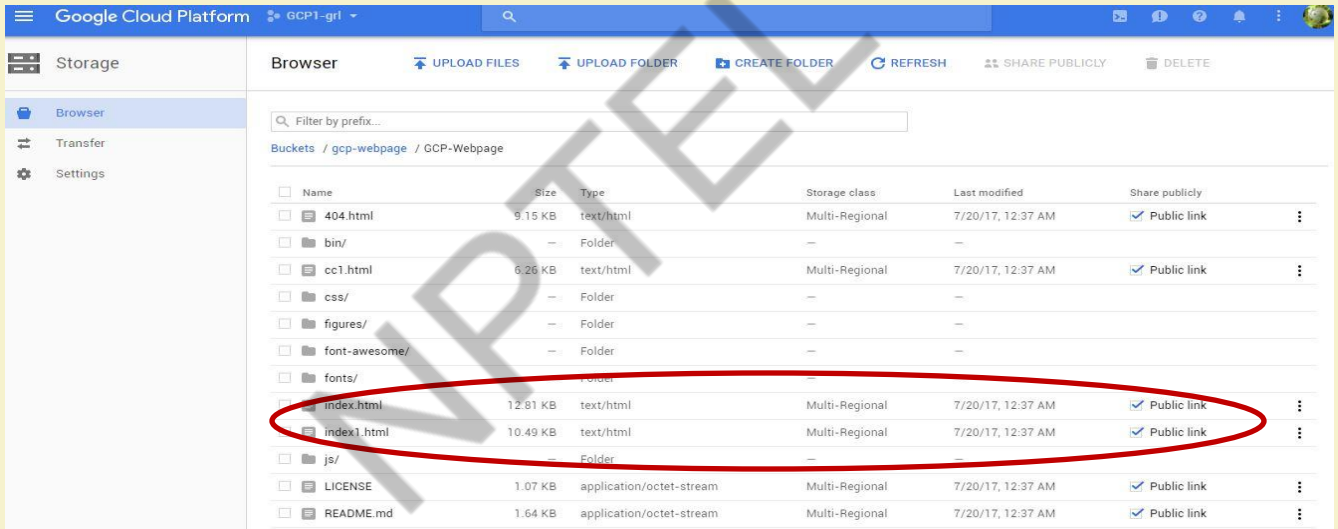
iii) In the **Configure website** dialog, specify the **Main Page** and the **404 (Not Found) Page** or even your web-site folder!



NPTEL

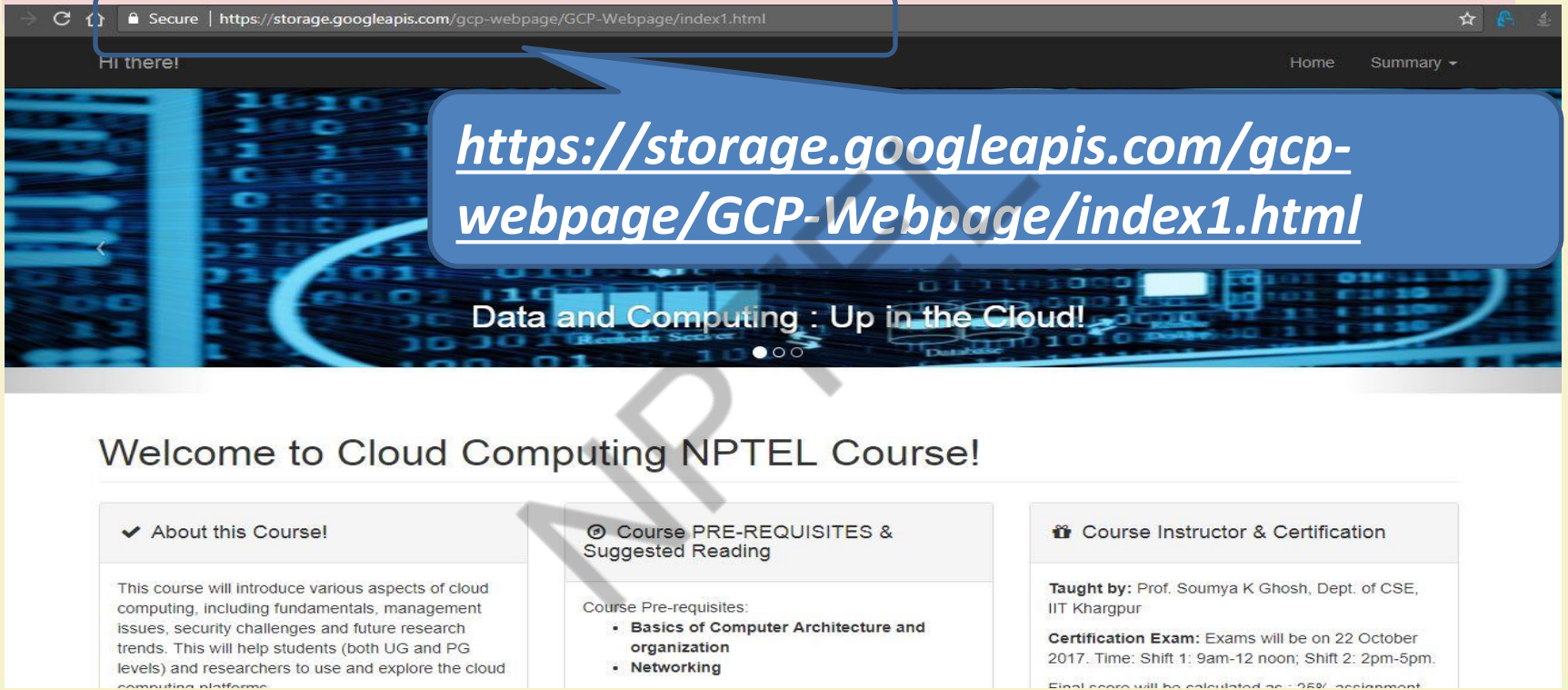
An easy example: Host your *web-page* inside *Google Cloud Platform*

iv) Get the public link of your html of home-page or ***index.html***



NPTEL

And you are ready to go! ☺

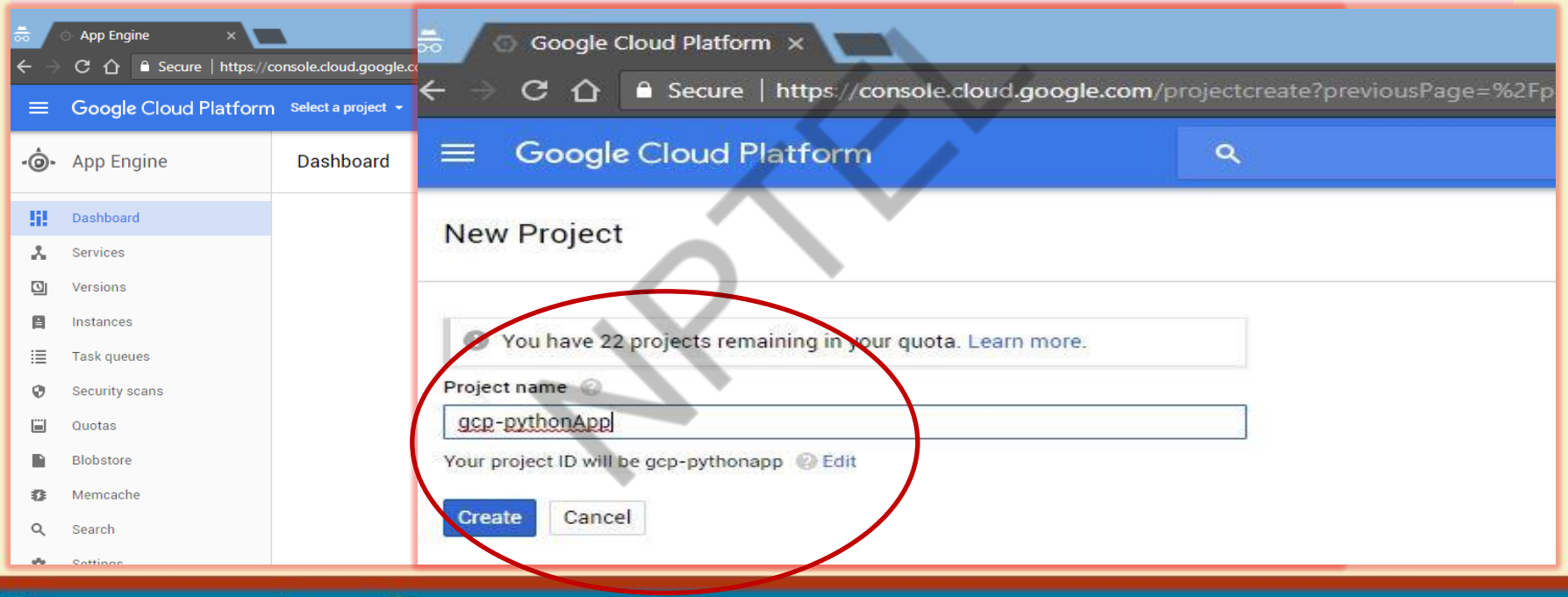


Example 2: Build your *web-app* using *Google App Engine*

NPTEL

Another example: Host your *web-app* using *Google App Engine*

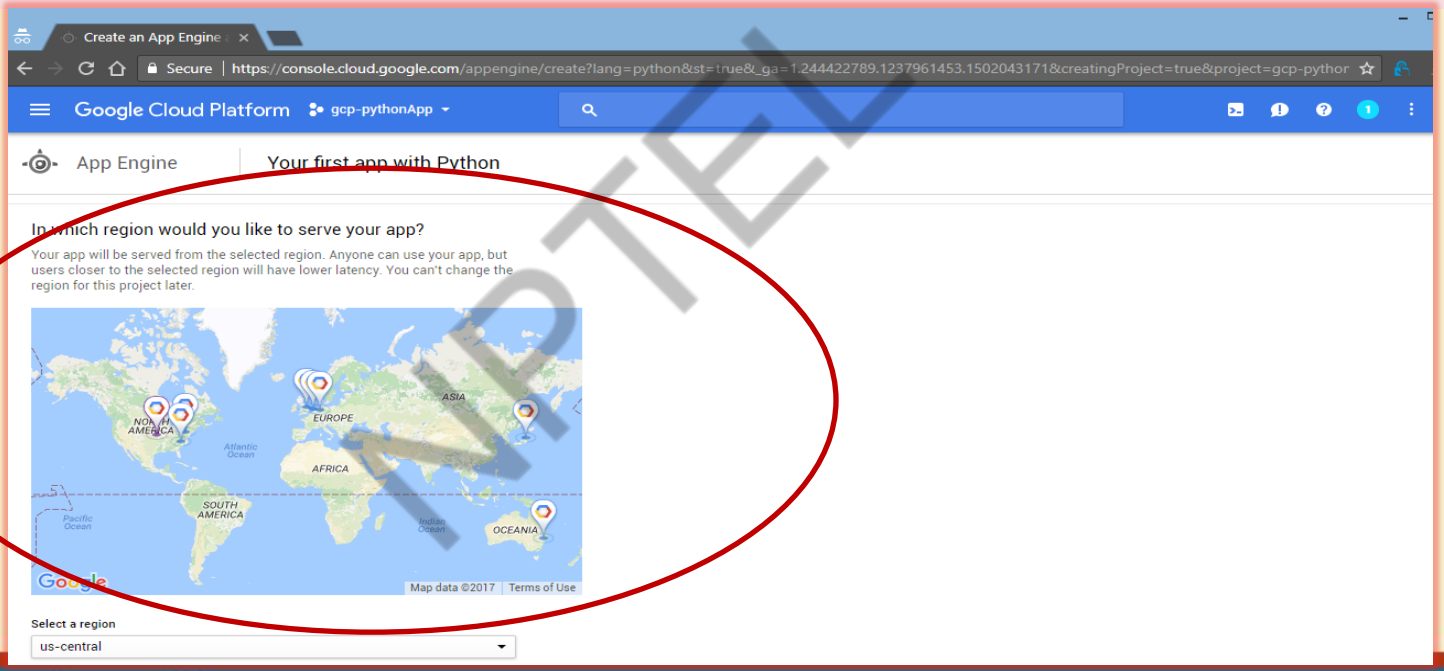
i) Open the Google Cloud Platform Console & create a new project using ***Cloud Platform project and App Engine application***



NPTEL

Another example: Host your *web-app* using *Google App Engine*

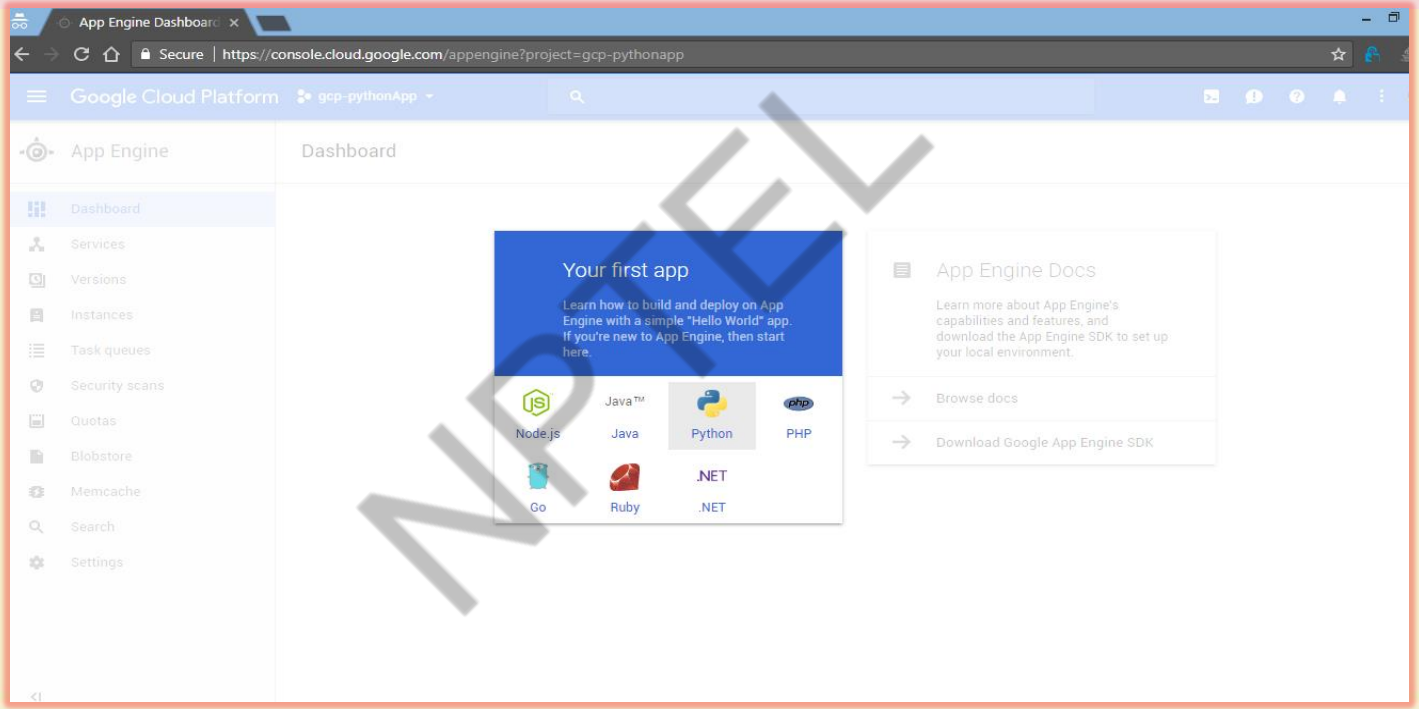
ii) When prompted, select the ***region*** where you want your App Engine application located.



NPTEL

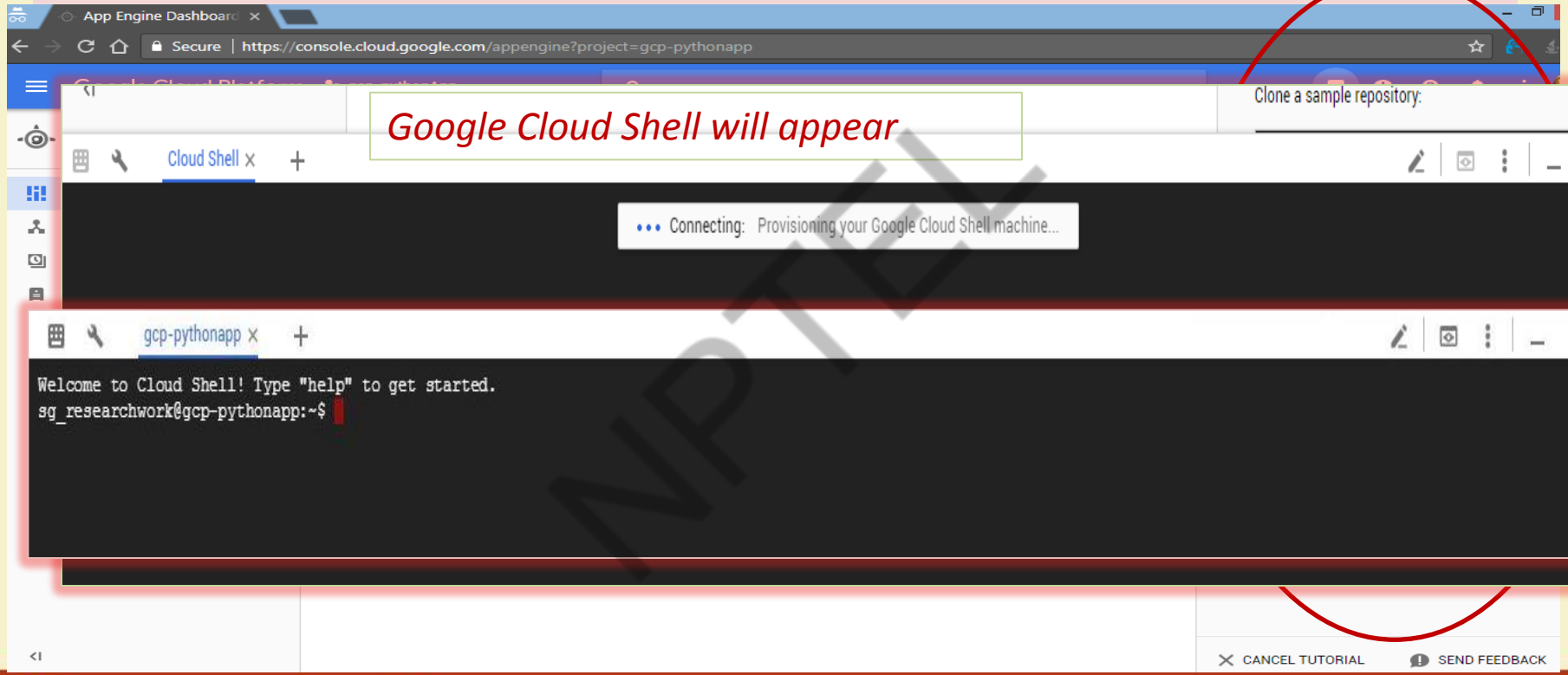
Another example: Host your *web-app* using *Google App Engine*

iii) Select your preferred programming language to build your app.



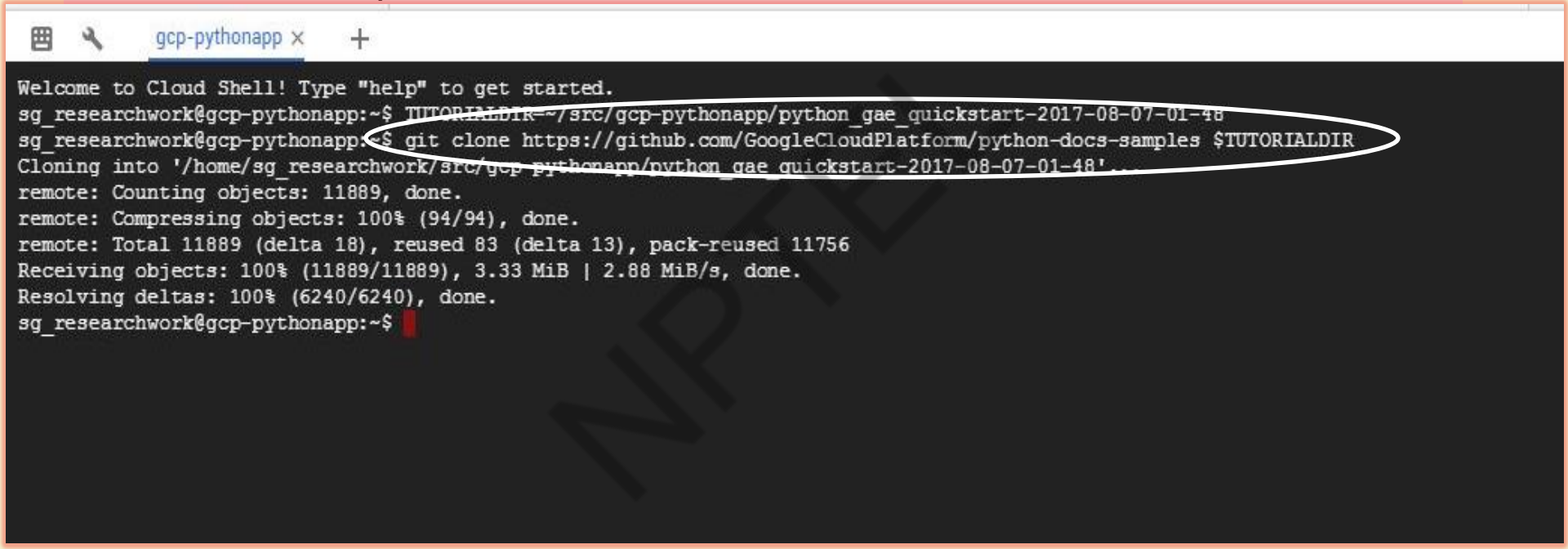
NPTEL

iv) Activate your ***Google Cloud Shell*** .



NPTEL

v) Clone the Hello World sample app repository and go to the directory that contains the sample code



v) Each application must contain ‘app.yaml’ and code base ‘main.py’ [with Flask web app deployment]

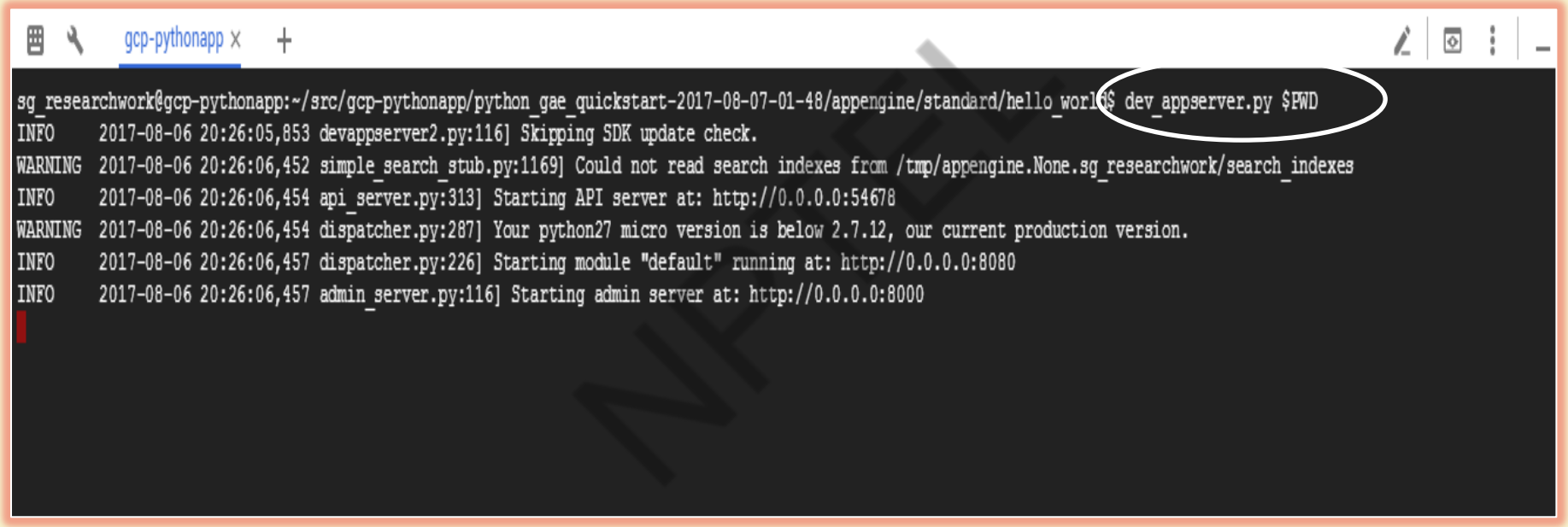
```
sg_research
sg_research
runtime: py
api_version
threadsafe:

handlers:
- url: /.*
  script: m
sg_research
```

gcp-pythonapp ×

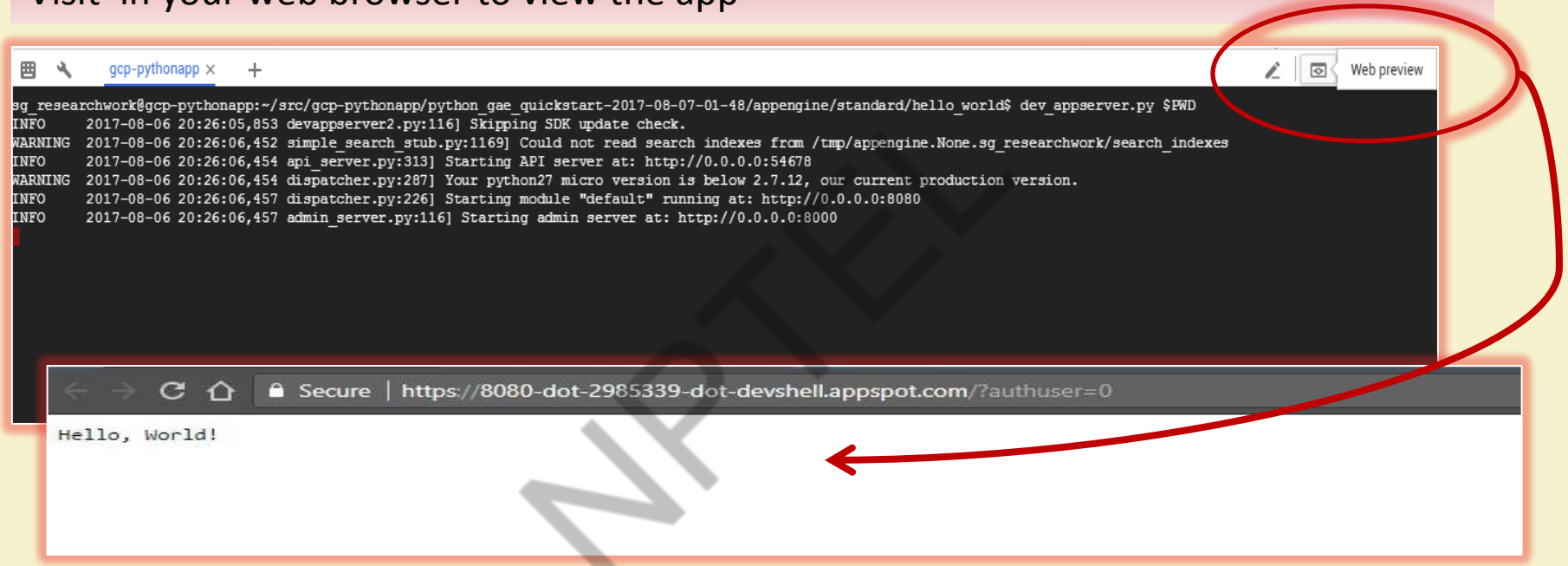
```
# you may not use this file except in compliance with the License.
# You may obtain a copy of the License at
#
#     http://www.apache.org/licenses/LICENSE-2.0
#
# Unless required by applicable law or agreed to in writing, software
# distributed under the License is distributed on an "AS IS" BASIS,
# WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
# See the License for the specific language governing permissions and
# limitations under the License.

import webapp2


class MainPage(webapp2.RequestHandler):
    def get(self):
        self.response.headers['Content-Type'] = 'text/plain'
        self.response.write('Hello, World!')


app = webapp2.WSGIApplication([
    ('/', MainPage),
], debug=True)
sg_researchwork@gcp-pythonapp:~/src/gcp-pythonapp/python_gae_quickstart-2017-08-07-01-48/appengine/standard/hello_world$
```

IIT KHARAGPUR
NPTEL ONLINE CERTIFICATION COURSES

vi) From within the hello_world directory where the app's app.yaml configuration file is located, start the *local development server :* **dev_appserver.py $PWD**

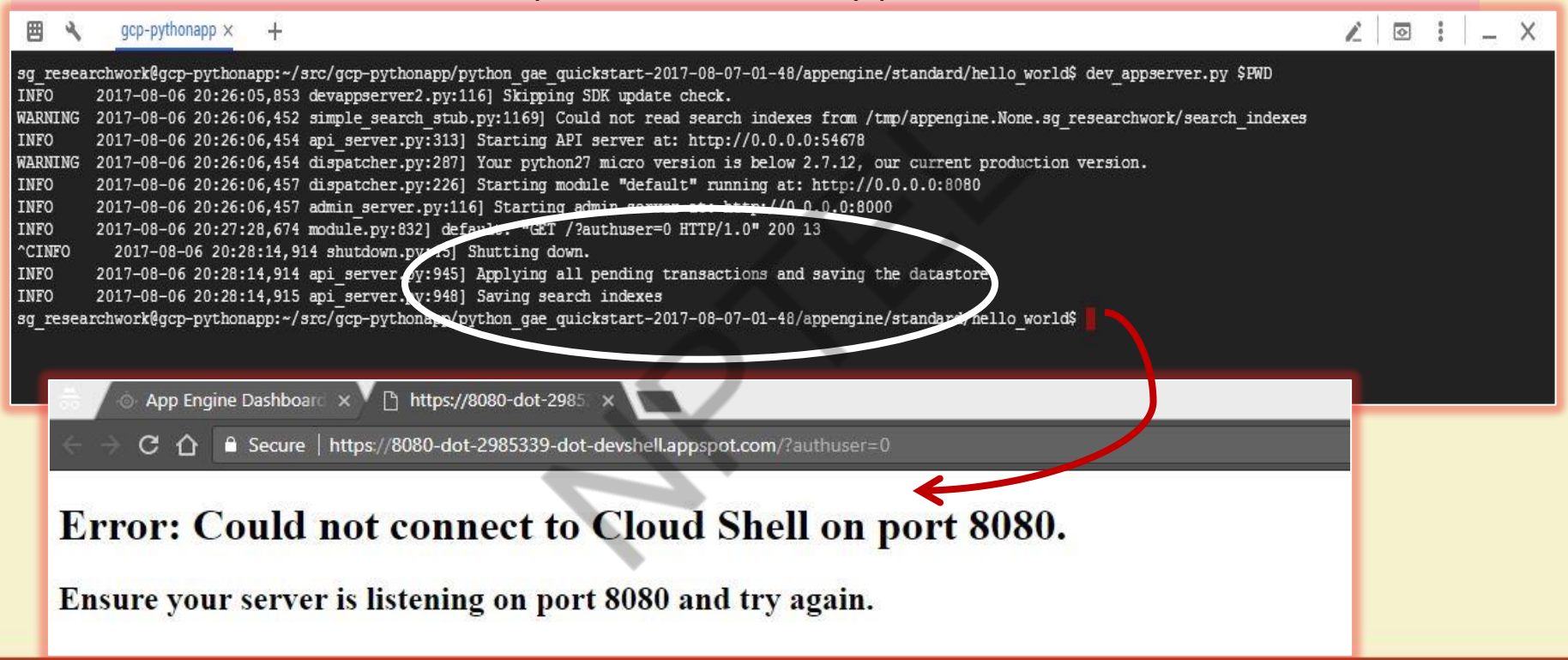


Visit in your web browser to view the app



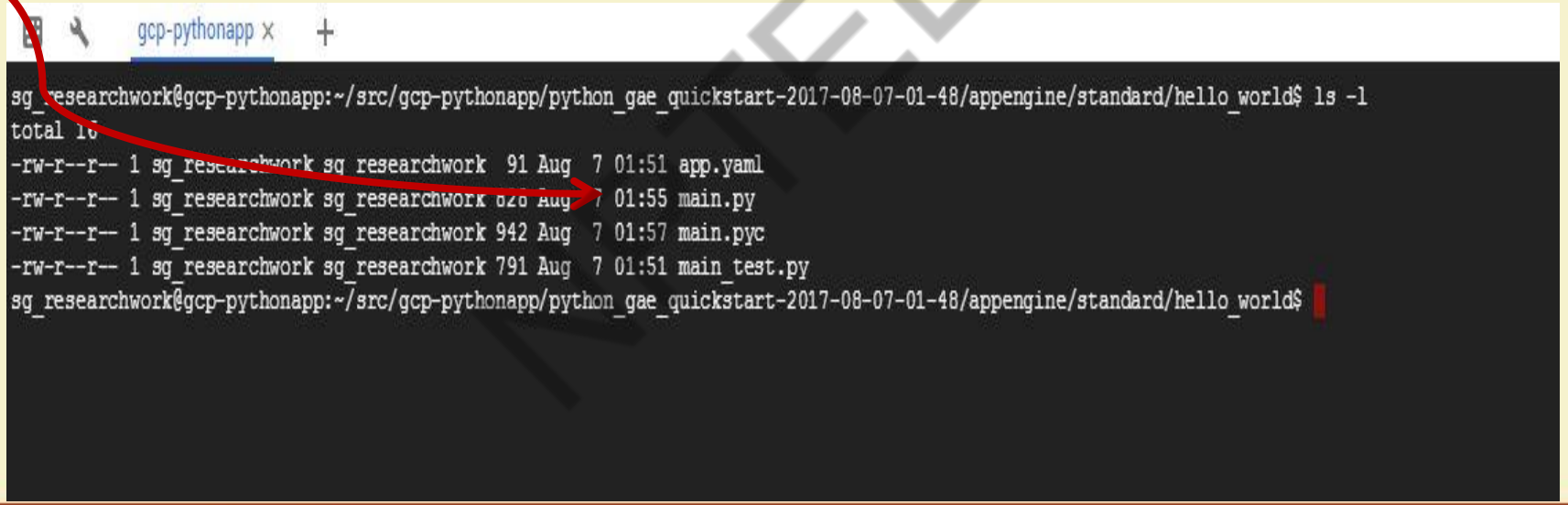
NPTEL

You can shut-down the development server at any point!



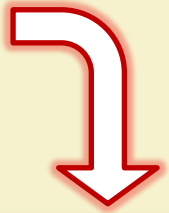
You can leave the development server running while you develop your application. The development server watches for changes in your source files and reloads them if necessary

Edit main.py



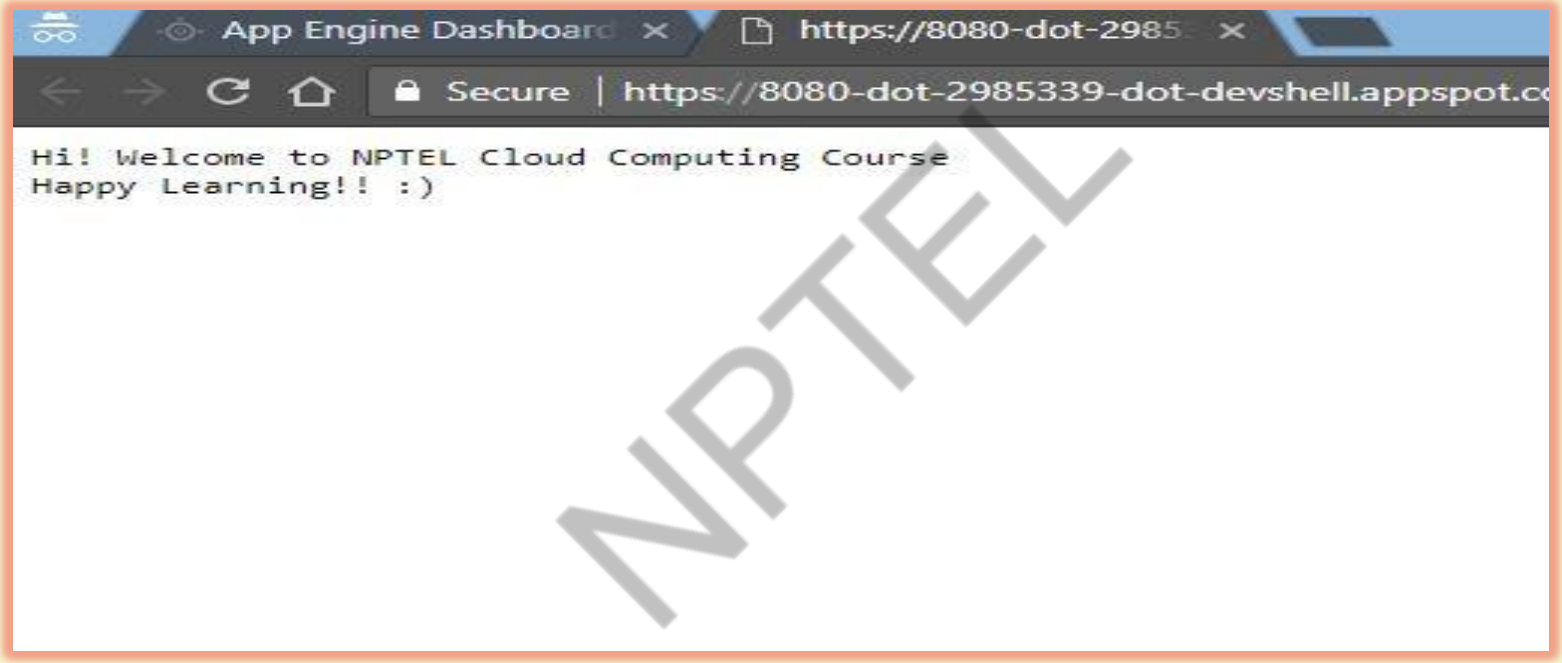
Edit main.py

```
import webapp2


class MainPage(webapp2.RequestHandler):
    def get(self):
        self.response.headers['Content-Type'] = 'text/plain'
        self.response.write('Hello, World!')


app = webapp2.WSGIApplication([
    ('/', MainPage),
], debug=True)
~
~
~
~
```



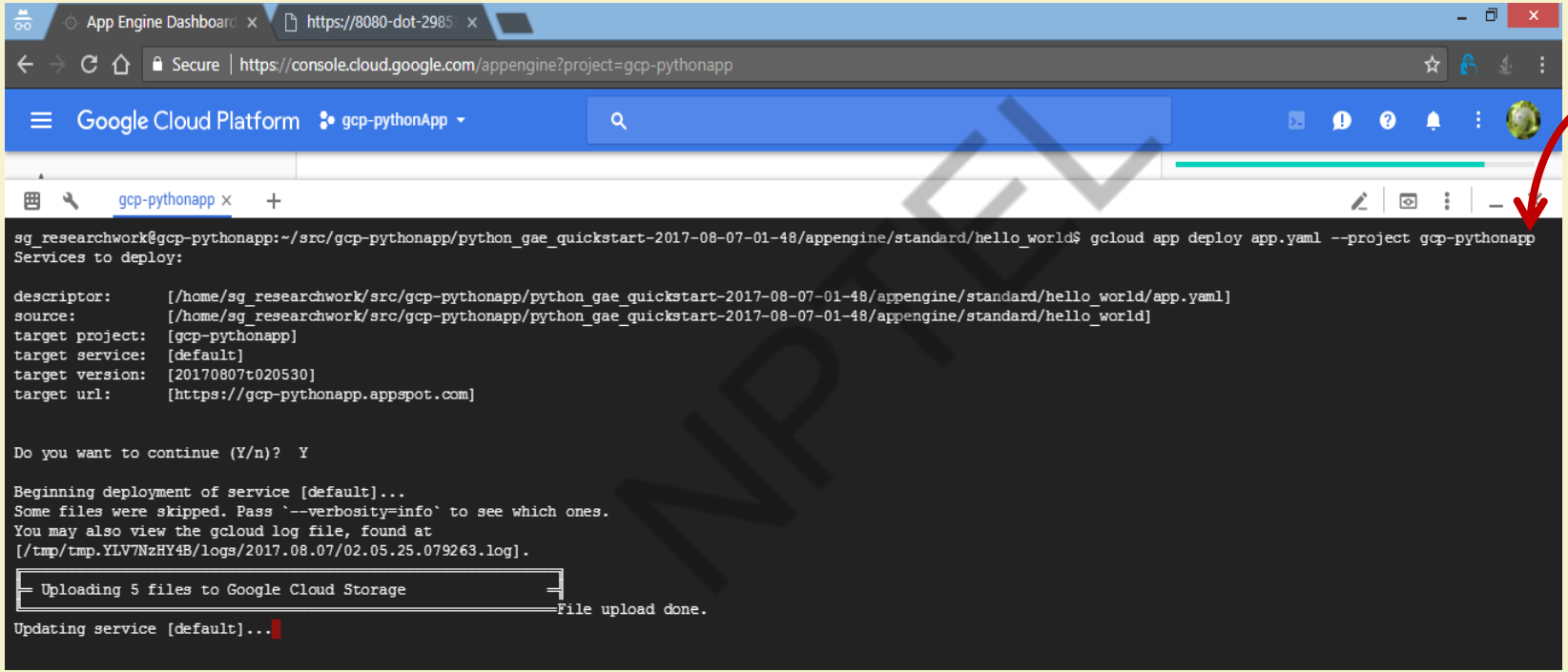
```
import webapp2


class MainPage(webapp2.RequestHandler):
    def get(self):
        self.response.headers['Content-Type'] = 'text/plain'
        self.response.write('Hi! Welcome to NPTEL Cloud Computing Course\nHappy Learning!! :)')


app = webapp2.WSGIApplication([
    ('/', MainPage),
], debug=True)
~
~
```

Reload the web-page

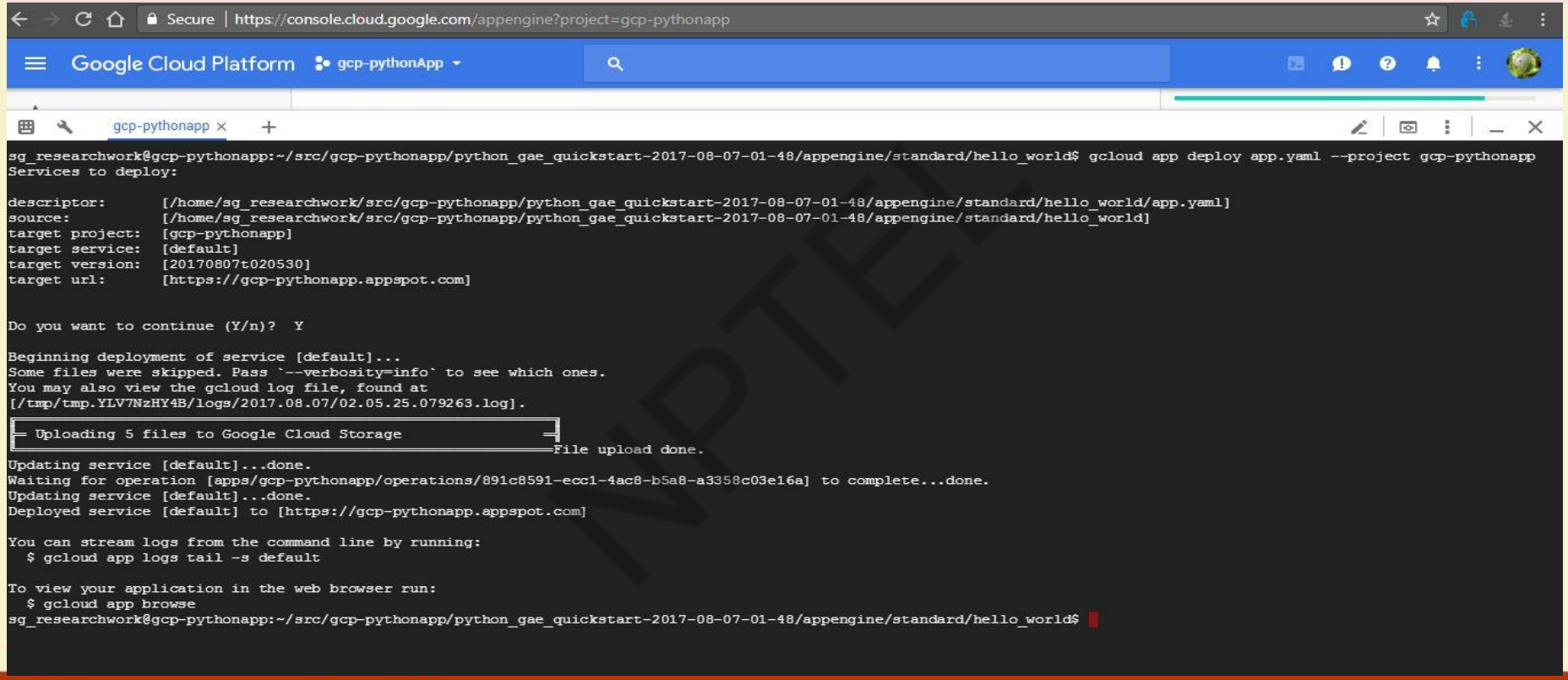


NPTEL

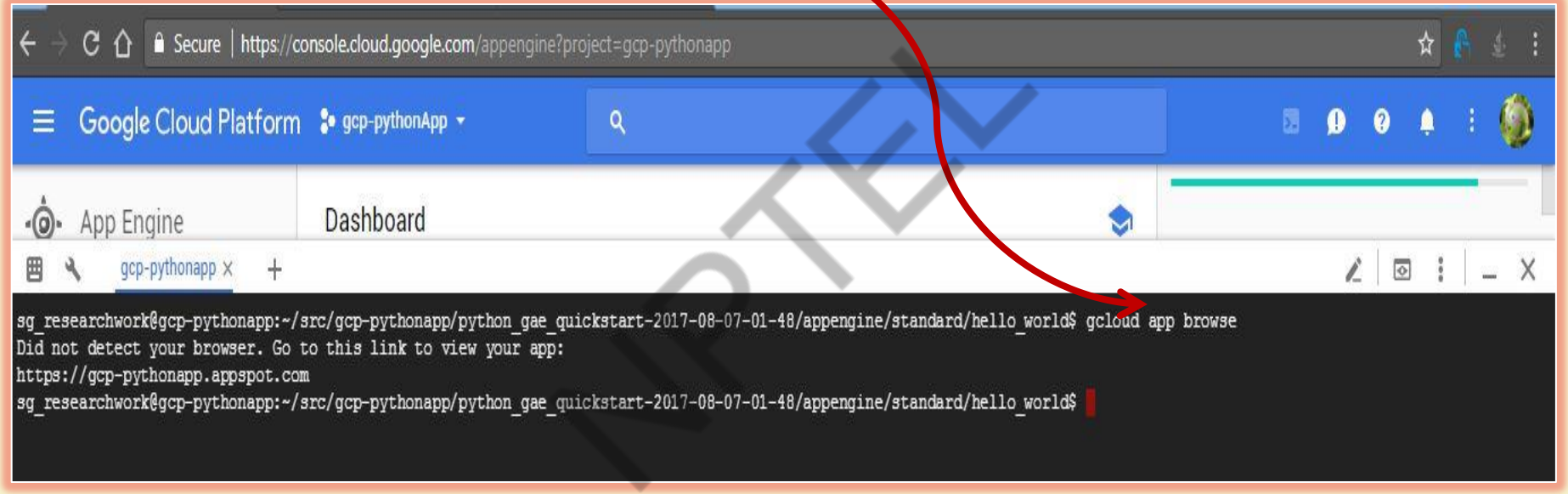
Now deploy your app to App Engine : ***gcloud app deploy app.yaml - - project gcp-pythonapp***



Now deploy your app to App Engine : *gcloud app deploy app.yaml - - project gcp-pythonapp*

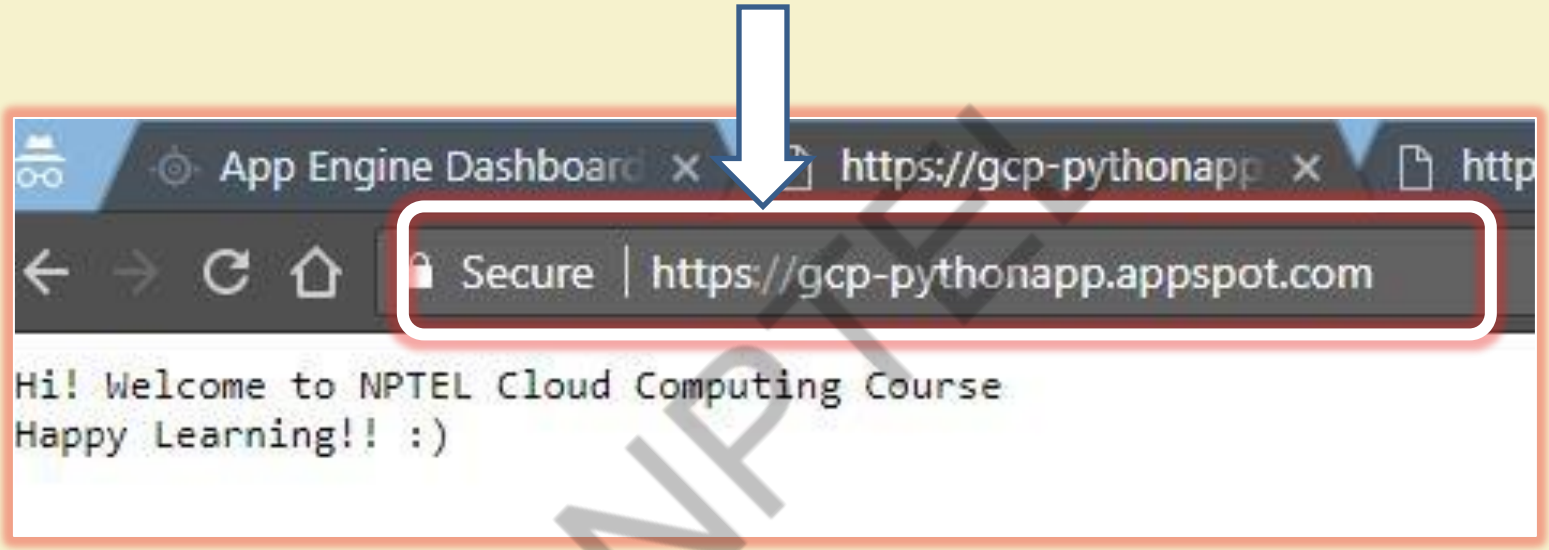


View your application : ***gcloud app browse***



NPTEL

View your application : ***gcloud app browse***



NPTEL

You have successfully deployed an web-app!

NPTEL

Some Useful Links!

- Google Cloud Platform Developers Portal: ***https://cloud.google.com/developers***
- Google Developers Global Portal: ***https://developers.google.com***
- Google Cloud Platform Products list: ***https://cloud.google.com/products/compute-engine/***
- Understanding Google APIs: ***https://fethidilmi.blogspot.com/2013/01/understanding-google-apis.html***

NPTEL

References

- *https://cloud.google.com/storage/docs/*
- *https://cloud.google.com/why-google/*
- *https://cloud.google.com/products/*
- *http://fethidilmi.blogspot.com*
- *https://www.slideshare.net/delphiexile/google-cloud-platform-overview-28927697*

NPTEL

Thank You!!

NPTEL