



IIT KHARAGPUR



NPTEL ONLINE  
CERTIFICATION COURSES

# CLOUD COMPUTING

## Private Cloud Implementation using OpenStack

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

IIT KHARAGPUR

# Overview

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





Meghamala - a one stop solution to your computational needs.

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

[Know more](#)

## Welcome to Meghamala!

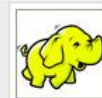
Meghamala is an initiative by the Indian Institute of Technology, Kharagpur to provide on demand computational and storage resources to the institute research community. It is built using OpenStack Cloud Computing platform.

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 desktop 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](#)

- **MegHadoop**
  - Hadoop cluster running on Meghamala

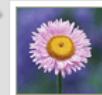
### Latest News



MAR 23, 2016

#### MegHadoop

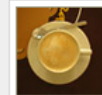
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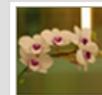
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MAR 17, 2015

#### Installation Complete

Hardware and software installed. Testing in progress.



MAR 13, 2015

#### GUI on Meghamala

VM images with GUI have been created on Meghamala.



## 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

Operating system

Persistent storage of 20 GB required  Yes  No

VM required till (max 60 days)



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).

### 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.

## 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 Stujeet Deshmukh, M.Tech. (Information Technology)

### ▪ CIC Engineers

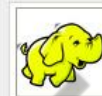
- Alokesh Chattopadhyay
- Alok Baran Das

### ▪ 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



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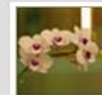
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# Meghamala - IITKgp Cloud

*(using OpenStack)*

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## Log In

User Name

Password

Sign In

Horizon Login Page

Project

Compute

Overview

Instances

Volumes

Images

Access &amp; 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	VCPU	Disk	RAM	VCPU Hours	Disk GB Hours
admin	128	2855	304GB	679.47	64662.52

Displaying 1 item

Project

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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
<a href="#">nik_windows</a>	2	45	4GB	2 years, 2 months
<a href="#">Ravi_Teja_2</a>	8	160	16GB	1 year, 4 months
<a href="#">s...</a>			16GB	1 year, 11 months
<a href="#">u...</a>			4GB	1 year, 10 months

Graphical representation of resource usage

# Instances

## Instances

<input type="checkbox"/>	Instance Name	Image Name	IP Address	Size	Key Pair	Status	Availability Zone	Task	Power State	Uptime	Actions
<input type="checkbox"/>	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	<input type="button" value="Create Snapshot"/> <input type="button" value="More"/>
<input type="checkbox"/>	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	<input type="button" value="Create Snapshot"/> <input type="button" value="More"/>
<input type="checkbox"/>	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	<input type="button" value="Start Instance"/> <input type="button" value="More"/>
<input type="checkbox"/>	CL1_R_SERVER1	Ubuntu_New_X2Go	192.164.0.4 10.4.0.4	IITKGP_xlarge   32GB RAM   8 VCPU   60.0GB Disk	-	Active	nova	None	Running	9 months, 1 week	<input type="button" value="Create Snapshot"/> <input type="button" value="More"/>
<input type="checkbox"/>	Harshit_Ulkarsh_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	<input type="button" value="Create Snapshot"/> <input type="button" value="More"/>
<input type="checkbox"/>	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	<input type="button" value="Start Instance"/> <input type="button" value="More"/>
<input type="checkbox"/>	MeghadoolNewMaster	CentOS_6.5_GUI	192.164.0.7 10.4.0.7	IITKGP_Meghadool_Bigger   48GB RAM   8 VCPU   600.0GB Disk	-	Active	nova	None	Running	1 year, 4 months	<input type="button" value="Create Snapshot"/> <input type="button" value="More"/>
<input type="checkbox"/>	Meghadool_18	CentOS_6.5_GUI	192.164.0.8 10.4.0.8	Meghadool_new   8GB RAM   4 VCPU   90.0GB Disk	-	Active	nova	None	Running	1 year, 5 months	<input type="button" value="Create Snapshot"/> <input type="button" value="More"/>
<input type="checkbox"/>	Meghadool_19				-	Active	nova	None	Running	1 year, 5 months	<input type="button" value="Create Snapshot"/> <input type="button" value="More"/>

Details of Instances

- Project ▾
- Compute ▾
- Overview
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- Volumes
- Images
- Access & Security
- Network ▶
- Object Store ▶
- Orchestration ▶
- Admin ▶

## Volumes & Snapshots

 Volumes Volume Snapshots

### Volumes

Filter



Filter

+ Create Volume

Delete Volumes

<input type="checkbox"/>	Name	Description	Size	Status	Type	Attached To	Availability Zone	Actions
<input type="checkbox"/>	<a href="#">checkcentos_vol</a>	created on 30-12-2016 for downloading...	200GB	In-Use	-	Attached to <a href="#">CheckCentos</a> on /dev/vdb	nova	<a href="#">Edit Volume</a> <a href="#">More ▾</a>
<input type="checkbox"/>	<a href="#">CL1_R_VOL1</a>		100GB	In-Use	-	Attached to <a href="#">CL1_R_SERVER1</a> on /dev/vdc	nova	<a href="#">Edit Volume</a> <a href="#">More ▾</a>
<input type="checkbox"/>	<a href="#">cc16</a>		5GB	In-Use	-	Attached to <a href="#">cc16_test1</a> on /dev/vdb	nova	<a href="#">Edit Volume</a> <a href="#">More ▾</a>
<input type="checkbox"/>	<a href="#">cc16_test1</a>		2GB	Available	-		nova	<a href="#">Edit Volume</a> <a href="#">More ▾</a>
<input type="checkbox"/>	<a href="#">DebopriyoTestTwitter_vol</a>	Volume reduced to 1TB from 2TB	1024GB	In-Use	-	Attached to <a href="#">DebopriyoTestTwitterTest</a> on /dev/vdb	nova	<a href="#">Edit Volume</a> <a href="#">More ▾</a>
<input type="checkbox"/>	<a href="#">Meghadoop_20_Vol</a>	-	110GB	In-Use	-	Attached to <a href="#">Meghadoop_20</a> on /dev/vdb	nova	<a href="#">Edit Volume</a> <a href="#">More ▾</a>
<input type="checkbox"/>	<a href="#">Meghadoop_19_Vol</a>	-	110GB	In-Use	-	Attached to <a href="#">Meghadoop_19</a> on /dev/vdb	nova	<a href="#">Edit Volume</a> <a href="#">More ▾</a>
<input type="checkbox"/>	<a href="#">Meghadoop_18_Vol</a>	-	110GB	In-Use	-	Attached to <a href="#">Meghadoop_18</a> on /dev/vdb	nova	<a href="#">Edit Volume</a> <a href="#">More ▾</a>
<input type="checkbox"/>	<a href="#">Meghadoop_17_Vol</a>	-	110GB	In-Use	-	Attached to <a href="#">Meghadoop_17</a> on /dev/vdb	nova	<a href="#">Edit Volume</a> <a href="#">More ▾</a>
<input type="checkbox"/>	<a href="#">Meghadoop_16_Vol</a>	-	110GB	In-Use	-	Attached to <a href="#">Meghadoop_16</a> on /dev/vdb	nova	<a href="#">Edit Volume</a> <a href="#">More ▾</a>

Cinder- details of Volumes



Project

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# Images

## Images

Project (16)

Shared with Me (0)

Public (14)

+ Create Image

Delete Images

<input type="checkbox"/>	Image Name	Type	Status	Public	Protected	Format	Actions
<input type="checkbox"/>	<a href="#">Meghadooop_snapshot_ready</a>	Snapshot	Active	Yes	No	QCOW2	<input type="button" value="Launch"/> <input type="button" value="More"/>
<input type="checkbox"/>	<a href="#">CentOS_6.5_GUI</a>	Image	Active	Yes	No	QCOW2	<input type="button" value="Launch"/> <input type="button" value="More"/>
<input type="checkbox"/>	<a href="#">Stacksync1_10_4_2_30_01092015</a>	Snapshot	Active	No	No	QCOW2	<input type="button" value="Launch"/> <input type="button" value="More"/>
<input type="checkbox"/>	<a href="#">stacksync_working</a>	Snapshot	Active	No	No	QCOW2	<input type="button" value="Launch"/> <input type="button" value="More"/>
<input type="checkbox"/>	<a href="#">Ubuntu_14_04_x2go_60G</a>	Image	Active	Yes	No	QCOW2	<input type="button" value="Launch"/> <input type="button" value="More"/>
<input type="checkbox"/>	<a href="#">Ubuntu_14_04_x2go_45G</a>	Image	Active	Yes	No	QCOW2	<input type="button" value="Launch"/> <input type="button" value="More"/>
<input type="checkbox"/>	<a href="#">Ubuntu_14_04_x2go_20G</a>	Image	Active	Yes	No	QCOW2	<input type="button" value="Launch"/> <input type="button" value="More"/>
<input type="checkbox"/>	<a href="#">Ubuntu_New_X2Go</a>	Image	Active	Yes	No	QCOW2	<input type="button" value="Launch"/> <input type="button" value="More"/>
<input type="checkbox"/>	<a href="#">Windows_7_x64</a>	Image	Active	Yes	No	QCOW2	<input type="button" value="Launch"/> <input type="button" value="More"/>
<input type="checkbox"/>	<a href="#">Fedora_20_GUI</a>	Image	Active	Yes	No	QCOW2	<input type="button" value="Launch"/> <input type="button" value="More"/>
<input type="checkbox"/>	<a href="#">Centos_7_GUI</a>	Image	Active	Yes	No	QCOW2	<input type="button" value="Launch"/> <input type="button" value="More"/>

Glance- Overview of available images in Meghamala cloud

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## Manage Security Group Rules: default

### Security Group Rules

+ Add Rule

Delete Rules

<input type="checkbox"/>	Direction	Ether Type	IP Protocol	Port Range	Remote	Actions
<input type="checkbox"/>	Egress	IPv4	Any	-	0.0.0.0/0 (CIDR)	Delete Rule
<input type="checkbox"/>	Ingress	IPv4	Any	-	default	Delete Rule
<input type="checkbox"/>	Ingress	IPv6	Any	-	default	Delete Rule
<input type="checkbox"/>	Egress	IPv6	Any	-	:::0 (CIDR)	Delete Rule
<input type="checkbox"/>	Ingress	IPv4	ICMP	-	0.0.0.0/0 (CIDR)	Delete Rule
<input type="checkbox"/>	Ingress	IPv4	TCP	1 - 65535	0.0.0.0/0 (CIDR)	Delete Rule
<input type="checkbox"/>	Ingress	IPv4	TCP	3389 (RDP)	0.0.0.0/0 (CIDR)	Delete Rule
<input type="checkbox"/>	Ingress	IPv4	TCP	27017	0.0.0.0/0 (CIDR)	Delete Rule

Displaying 8 items

Neutron- Network Access Rules of a Security Group

- Project
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  - Volumes
  - Flavors
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  - 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
<a href="#">node-77.domain.tld</a>	QEMU	48	52	125GB	104GB	1.0TB	930.0GB	13
<a href="#">node-62.domain.tld</a>	QEMU	48	26	125GB	84GB	1.0TB	985.0GB	5
<a href="#">node-79.domain.tld</a>	QEMU	48	50	125GB	116GB	1.0TB	940.0GB	12

Displaying 3 items

Nova-vCPU, RAM, Storage details of Hypervisors

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## Flavors

### Flavors



Filter

[+ Create Flavor](#)
[Delete Flavors](#)

<input type="checkbox"/>	Flavor Name	VCPUs	RAM	Root Disk	Ephemeral Disk	Swap Disk	ID	Public	Actions
<input type="checkbox"/>	m1.tiny	1	512MB	1GB	0GB	0MB	1	Yes	<a href="#">Edit Flavor</a> <a href="#">More ▾</a>
<input type="checkbox"/>	m1.small	1	2048MB	20GB	0GB	0MB	2	Yes	<a href="#">Edit Flavor</a> <a href="#">More ▾</a>
<input type="checkbox"/>	m1.medium	2	4096MB	40GB	0GB	0MB	3	Yes	<a href="#">Edit Flavor</a> <a href="#">More ▾</a>
<input type="checkbox"/>	IITKGP_regular	2	4096MB	45GB	0GB	0MB	66e4a1a7-249a-4853-925d-6b59e1118b4f	Yes	<a href="#">Edit Flavor</a> <a href="#">More ▾</a>
<input type="checkbox"/>	RamOverCommitTest	2	16384MB	2GB	0GB	0MB	206e40e2-dfba-432a-8bac-61e80147a5ca	Yes	<a href="#">Edit Flavor</a> <a href="#">More ▾</a>
<input type="checkbox"/>	IITKGP_large	4	8192MB	45GB	0GB	0MB	a0266a30-b6b1-4d82-8468-1e4b643dfc51	Yes	<a href="#">Edit Flavor</a> <a href="#">More ▾</a>
<input type="checkbox"/>	m1.large	4	8192MB	80GB	0GB	0MB	4	Yes	<a href="#">Edit Flavor</a> <a href="#">More ▾</a>
<input type="checkbox"/>	Meghadoop	4	8192MB	90GB	0GB	1024MB	1cc3f7a3-7678-4139-b51a-e72a6b0a42b4	Yes	<a href="#">Edit Flavor</a> <a href="#">More ▾</a>
<input type="checkbox"/>	Meghadoop_new	4	8192MB	90GB	0GB	0MB	dc1aaa5b-d6e8-435d-b994-7172606c9312	Yes	<a href="#">Edit Flavor</a> <a href="#">More ▾</a>
<input type="checkbox"/>	IITKGP_xlarge	8	16384MB	60GB	0GB	0MB	36031ddf-12b0-406c-9343-221567593cff	Yes	<a href="#">Edit Flavor</a> <a href="#">More ▾</a>
<input type="checkbox"/>	m1.xlarge	8	16384MB	160GB	0GB	0MB	5	Yes	<a href="#">Edit Flavor</a> <a href="#">More ▾</a>

Nova- Different flavors of VMs in Meghamala

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  - Volumes
  - Flavors
  - Images**
  - Networks
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# Images

## Images

Image Name =

<input type="checkbox"/>	Image Name	Type	Status	Public	Protected	Format	Actions
<input type="checkbox"/>	<a href="#">Meghadooop_snapshot_ready</a>	Snapshot	Active	Yes	No	QCOW2	<input type="button" value="Edit"/> <input type="button" value="More"/>
<input type="checkbox"/>	<a href="#">CentOS_6.5_GUI</a>	Image	Active	Yes	No	QCOW2	<input type="button" value="Edit"/> <input type="button" value="More"/>
<input type="checkbox"/>	<a href="#">Stacksync1_10_4_2_30_01092015</a>	Snapshot	Active	No	No	QCOW2	<input type="button" value="Edit"/> <input type="button" value="More"/>
<input type="checkbox"/>	<a href="#">stacksync_working</a>	Snapshot	Active	No	No	QCOW2	<input type="button" value="Edit"/> <input type="button" value="More"/>
<input type="checkbox"/>	<a href="#">Ubuntu_14_04_x2go_60G</a>	Image	Active	Yes	No	QCOW2	<input type="button" value="Edit"/> <input type="button" value="More"/>
<input type="checkbox"/>	<a href="#">Ubuntu_14_04_x2go_45G</a>	Image	Active	Yes	No	QCOW2	<input type="button" value="Edit"/> <input type="button" value="More"/>
<input type="checkbox"/>	<a href="#">Ubuntu_14_04_x2go_20G</a>	Image	Active	Yes	No	QCOW2	<input type="button" value="Edit"/> <input type="button" value="More"/>
<input type="checkbox"/>	<a href="#">Ubuntu_New_X2Go</a>	Image	Active	Yes	No	QCOW2	<input type="button" value="Edit"/> <input type="button" value="More"/>
<input type="checkbox"/>	<a href="#">Windows_7_x64</a>	Image	Active	Yes	No	QCOW2	<input type="button" value="Edit"/> <input type="button" value="More"/>
<input type="checkbox"/>	<a href="#">Fedora_20_GUI</a>	Image	Active	Yes	No	QCOW2	<input type="button" value="Edit"/> <input type="button" value="More"/>
<input type="checkbox"/>	<a href="#">Centos_7_GUI</a>	Image	Active	Yes	No	QCOW2	<input type="button" value="Edit"/> <input type="button" value="More"/>
<input type="checkbox"/>	<a href="#">Ubuntu_14_04_x2go_60G</a>	Image	Active	Yes	No	QCOW2	<input type="button" value="Edit"/> <input type="button" value="More"/>
<input type="checkbox"/>	<a href="#">Centos_7_GUI</a>	Image	Active	Yes	No	QCOW2	<input type="button" value="Edit"/> <input type="button" value="More"/>

Images of Cloud Instance in Meghamala

- Project ▶
- Admin ▼
  - System Panel ▼
  - Overview
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# System Info

[Services](#)
[Compute Services](#)
[Network Agents](#)
[Default Quotas](#)

## Compute Services

Filter

Name	Host	Zone	Status	State	Updated At
nova-consoleauth	node-61.domain.tld	internal	enabled	up	0 minutes
nova-conductor	node-61.domain.tld	internal	enabled	up	0 minutes
nova-scheduler	node-61.domain.tld	internal	enabled	up	0 minutes
nova-cert	node-61.domain.tld	internal	enabled	up	0 minutes
nova-compute	node-77.domain.tld	nova	enabled	up	0 minutes
nova-compute	node-62.domain.tld	nova	enabled	up	0 minutes
nova-compute	node-79.domain.tld	nova	enabled	up	0 minutes
nova-console	node-61.domain.tld	internal	enabled	up	0 minutes

Displaying 8 items

Compute Services in Meghamala

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# VM Creation

---

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## Instances

## Instances

Instance Name	Instance ID	Image	Flavor	IP Address	Network	Status	Availability Zone	OS Type	Uptime	Actions
ccTest	ccTest	CentOS 6.5 GUI	m1.tiny	192.164.111.105	nova	Active	nova	CentOS 6.5 GUI	2 months, 2 weeks	Create Snapshot More
TestDiskPartition	TestDiskPartition	CentOS 6.5 GUI	m1.tiny	192.164.111.106	nova	Active	nova	CentOS 6.5 GUI	3 months, 2 weeks	Create Snapshot More
centosForSify	centosForSify	CentOS 6.5 GUI	m1.tiny	192.164.111.107	nova	Active	nova	CentOS 6.5 GUI	7 months	Start Instance More
QL1_R_SERVER1	QL1_R_SERVER1	CentOS 6.5 GUI	m1.tiny	192.164.111.108	nova	Active	nova	CentOS 6.5 GUI	9 months, 1 week	Create Snapshot More
Harshit_Utkarsh_LARGE	Harshit_Utkarsh_LARGE	CentOS 6.5 GUI	m1.large	192.164.111.109	nova	Active	nova	CentOS 6.5 GUI	1 year, 2 months	Create Snapshot More
cc16_test1	cc16_test1	CentOS 6.5 GUI	m1.tiny	192.164.111.110	nova	Active	nova	CentOS 6.5 GUI	1 year, 4 months	Start Instance More
MeghadoopNewMaster	MeghadoopNewMaster	CentOS 6.5 GUI	m1.xlarge	192.164.111.111	nova	Active	nova	CentOS 6.5 GUI	1 year, 4 months	Create Snapshot More
Meghadoop_18	Meghadoop_18	CentOS 6.5 GUI	m1.xlarge	192.164.111.112	nova	Active	nova	CentOS 6.5 GUI	1 year, 5 months	Create Snapshot More
Meghadoop_19	Meghadoop_19	CentOS 6.5 GUI	m1.xlarge	192.164.111.113	nova	Active	nova	CentOS 6.5 GUI	1 year, 5 months	Create Snapshot More

### Launch Instance

Details \* Access & Security \* Networking \* Post-Creation Advanced Options

**Availability Zone**  
nova

**Instance Name \***  
Cloud\_nptel\_1

**Flavor \***  
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

**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



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# Instances

## Instances

Instance Name	Image	Flavor	IP Address	Network	Status	Availability Zone	Uptime	Actions
ccTest	CentOS 6.5 GUI (1.0 GB)	IITKGP regular	192.164.111.105	nova	Active	nova	2 months, 2 weeks	Create Snapshot More
TestDiskPartition	CentOS 6.5 GUI (1.0 GB)	IITKGP regular	192.164.111.105	nova	Active	nova	3 months, 2 weeks	Create Snapshot More
centosForSify	CentOS 6.5 GUI (1.0 GB)	IITKGP regular	192.164.111.105	nova	Active	nova	7 months	Start Instance More
QL1_R_SERVER1	CentOS 6.5 GUI (1.0 GB)	IITKGP regular	192.164.111.105	nova	Active	nova	9 months, 1 week	Create Snapshot More
Harshit_Utkarsh_LARGE	CentOS 6.5 GUI (1.0 GB)	IITKGP regular	192.164.111.105	nova	Active	nova	1 year, 2 months	Create Snapshot More
cc16_test1	CentOS 6.5 GUI (1.0 GB)	IITKGP regular	192.164.111.105	nova	Active	nova	1 year, 4 months	Start Instance More
MeghadoolNewMaster	CentOS 6.5 GUI (1.0 GB)	IITKGP regular	192.164.111.105	nova	Active	nova	1 year, 4 months	Create Snapshot More
Meghadool_18	CentOS 6.5 GUI (1.0 GB)	IITKGP regular	192.164.111.105	nova	Active	nova	1 year, 5 months	Create Snapshot More
Meghadool_19	CentOS 6.5 GUI (1.0 GB)	IITKGP regular	192.164.111.105	nova	Active	nova	1 year, 5 months	Create Snapshot More

### Launch Instance ✕

Details \*
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**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**

<b>Name</b>	IITKGP_regular
<b>VCPUs</b>	2
<b>Root Disk</b>	45 GB
<b>Ephemeral Disk</b>	0 GB
<b>Total Disk</b>	45 GB
<b>RAM</b>	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

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## Instances

## Instances

Instance Name	Image	Flavor	IP Address	Architecture	RAM	VCPU	Disk	Status	Availability Zone	Power State	Uptime	Actions
ccTest	CentOS_7.5_GUI	CentOS_7.5_GUI	192.164.111.130	x86_64	8GB	8	60.0GB	Active	nova	None	2 months, 2 weeks	Create Snapshot More
TestDiskPartition	Ubuntu_14.04_x2go_60G	Ubuntu_14.04_x2go_60G	192.164.111.129	x86_64	16GB	8	60.0GB	Active	nova	None	3 months, 2 weeks	Create Snapshot More
centosForSify	CentOS_7.5_GUI	CentOS_7.5_GUI	192.164.111.113	x86_64	4GB	2	45.0GB	Shutoff	nova	None	7 months	Start Instance More
CLI_R_SERVER1	Ubuntu_New_X2Go	Ubuntu_New_X2Go	192.164.111.130	x86_64	8GB	8	60.0GB	Active	nova	None	9 months, 1 week	Create Snapshot More
Harshit_Utkarsh_LARGE	Ubuntu_14.04_x2go_60G	Ubuntu_14.04_x2go_60G	192.164.111.129	x86_64	16GB	8	60.0GB	Active	nova	None	1 year, 2 months	Create Snapshot More
cc16_test1	Ubuntu_14.04_x2go_45G	Ubuntu_14.04_x2go_45G	192.164.111.113	x86_64	4GB	2	45.0GB	Shutoff	nova	None	1 year, 4 months	Start Instance More
MeghadooNewMaster	CentOS_6.5_GUI	CentOS_6.5_GUI	192.164.111.111	x86_64	48GB	8	600.0GB	Active	nova	None	1 year, 4 months	Create Snapshot More
Meghadoo_18	CentOS_6.5_GUI	CentOS_6.5_GUI	192.164.111.105	x86_64	8GB	4	90.0GB	Active	nova	None	1 year, 5 months	Create Snapshot More
Meghadoo_19	CentOS_6.5_GUI	CentOS_6.5_GUI	192.164.111.106	x86_64	8GB	4	90.0GB	Active	nova	None	1 year, 5 months	Create Snapshot More

### Launch Instance

Details \* Access & Security \* **Networking \*** Post-Creation Advanced Options

**Selected Networks**

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.

**Available networks**

- net04\_ext (id=4953 30c71-45d3-94d0-420a006429f1)
- net04 (id=3398028 0217-43ed-62a9-3402b7ba1702)

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Soft Reboot Instances

Terminate Instances

<input type="checkbox"/>	Instance Name	Image Name	IP Address	Size	Key Pair	Status	Availability Zone	Task	Power State	Uptime	Actions
<input type="checkbox"/>	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	<a href="#">Create Snapshot</a> <a href="#">More ^</a>
<input type="checkbox"/>	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	<a href="#">Create Snapshot</a> <a href="#">More ^</a>
<input type="checkbox"/>	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	<a href="#">Start Instance</a> <a href="#">More ^</a>
<input type="checkbox"/>	QL1_R_SERVER1	Ubuntu_New_X2Go	192.164.111.130 10.4.2.28	IITKGP_xlarge   32GB RAM   8 VCPU   60.0GB Disk	-	Active	nova	None	Running	9 months, 1 week	<a href="#">Create Snapshot</a> <a href="#">More ^</a>
<input type="checkbox"/>	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	<a href="#">Create Snapshot</a> <a href="#">More ^</a>
<input type="checkbox"/>	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	<a href="#">Start Instance</a> <a href="#">More ^</a>
<input type="checkbox"/>	MeghadoolNewMaster	CentOS_6.5_GUI	192.164.111.111 10.4.2.55	IITKGP_Meghadool_Bigger   48GB RAM   8 VCPU   600.0GB Disk	-	Active	nova	None	Running	1 year, 4 months	<a href="#">Create Snapshot</a> <a href="#">More ^</a>
<input type="checkbox"/>	Meghadool_18	CentOS_6.5_GUI	192.164.111.105 10.4.2.52	Meghadool_new   8GB RAM   4 VCPU   90.0GB Disk	-	Active	nova	None	Running	1 year, 5 months	<a href="#">Create Snapshot</a> <a href="#">More ^</a>
<input type="checkbox"/>	Meghadool_19	CentOS_6.5_GUI	192.164.111.106 10.4.2.53	Meghadool_new   8GB RAM   4 VCPU   90.0GB Disk	-	Active	nova	None	Running	1 year, 5 months	<a href="#">Create Snapshot</a> <a href="#">More ^</a>



Working...

## Instances

## Instances

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Soft Reboot Instances

Terminate Instances

<input type="checkbox"/>	Instance Name	Image Name	IP Address	Size	Key Pair	Status	Availability Zone	Task	Power State	Uptime	Actions
<input type="checkbox"/>	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 ▾
<input type="checkbox"/>	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 ▾
<input type="checkbox"/>	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 ▾
<input type="checkbox"/>	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 ▾
<input type="checkbox"/>	CL1_R_SERVER1	Ubuntu_New_X2Go	192.164.0.4 10.4.0.4	IITKGP_xlarge   32GB RAM   8 VCPU   60.0GB Disk	-	Active	nova	None	Running	9 months, 1 week	Create Snapshot More ▾
<input type="checkbox"/>	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 ▾
<input type="checkbox"/>	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 ▾
<input type="checkbox"/>	MeghadooNewMaster	CentOS_6.5_GUI	192.164.0.7 10.4.0.7	IITKGP_Meghadoo_Bigger   48GB RAM   8 VCPU   600.0GB Disk	-	Active	nova	None	Running	1 year, 4 months	Create Snapshot More ▾
<input type="checkbox"/>	Meghadoo_18	CentOS_6.5_GUI	192.164.0.8 10.4.0.8	Meghadoo_new   8GB RAM   4 VCPU   90.0GB Disk	-	Active	nova	None	Running	1 year, 5 months	Create Snapshot More ▾

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<input type="checkbox"/>	Instance Name	Image Name	IP Address	Size	Key Pair	Status	Availability Zone	Task	Power State	Uptime	Actions
<input type="checkbox"/>	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	<input type="button" value="Create Snapshot"/> <input type="button" value="More ▾"/>
<input type="checkbox"/>	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	<input type="button" value="Associate Floating IP"/> <input type="button" value="Edit Instance"/> <input type="button" value="Edit Security Groups"/> <input type="button" value="Console"/> <input type="button" value="View Log"/> <input type="button" value="Pause Instance"/> <input type="button" value="Suspend Instance"/> <input type="button" value="Resize Instance"/> <input type="button" value="Soft Reboot Instance"/> <input type="button" value="Hard Reboot Instance"/> <input type="button" value="Shut Off Instance"/> <input type="button" value="Rebuild Instance"/> <input type="button" value="Terminate Instance"/>
<input type="checkbox"/>	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	
<input type="checkbox"/>	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	
<input type="checkbox"/>	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	
<input type="checkbox"/>	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	
<input type="checkbox"/>	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	<input type="button" value="Start Instance"/> <input type="button" value="More ▾"/>
<input type="checkbox"/>	MeghadooNewMaster	CentOS_6.5_GUI	192.164.0.7 10.4.0.7	IITKGP_Meghadooop_Bigger   48GB RAM   8 VCPU   600.0GB Disk	-	Active	nova	None	Running	1 year, 4 months	<input type="button" value="Create Snapshot"/> <input type="button" value="More ▾"/>
<input type="checkbox"/>	Meghadooop_18	CentOS_6.5_GUI	192.164.0.8 10.4.0.8	Meghadooop_new   8GB RAM   4 VCPU   90.0GB Disk	-	Active	nova	None	Running	1 year, 5 months	<input type="button" value="Create Snapshot"/> <input type="button" value="More ▾"/>

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<input type="checkbox"/>	Instance Name	Image Name	IP Address	Size	Key Pair	Status	Availability Zone	Task	Power State	Uptime	Actions
<input type="checkbox"/>	<a href="#">Cloud_nptel_1</a>	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	<a href="#">Create Snapshot</a> <a href="#">More</a>
<input type="checkbox"/>	<a href="#">ccTest</a>	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	<a href="#">Create Snapshot</a> <a href="#">More</a>
<input type="checkbox"/>	<a href="#">TestDiskPartition</a>	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	<a href="#">Create Snapshot</a> <a href="#">More</a>
<input type="checkbox"/>	<a href="#">centosForSify</a>	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	<a href="#">Start Instance</a> <a href="#">More</a>
<input type="checkbox"/>	<a href="#">CL1_R_SERVER1</a>	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	<a href="#">Create Snapshot</a> <a href="#">More</a>
<input type="checkbox"/>	<a href="#">Harshit_Utkarsh_LARGE</a>	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	<a href="#">Create Snapshot</a> <a href="#">More</a>
<input type="checkbox"/>	<a href="#">cc16_test1</a>	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	<a href="#">Start Instance</a> <a href="#">More</a>
<input type="checkbox"/>	<a href="#">MeghadoopNewMaster</a>	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	<a href="#">Create Snapshot</a> <a href="#">More</a>
<input type="checkbox"/>	<a href="#">Meghadoop_18</a>	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	<a href="#">Create Snapshot</a> <a href="#">More</a>

```
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
```

WIDTEL

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# Accessing VM by User

---






Accessing of newly created VM through X2Go Client

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

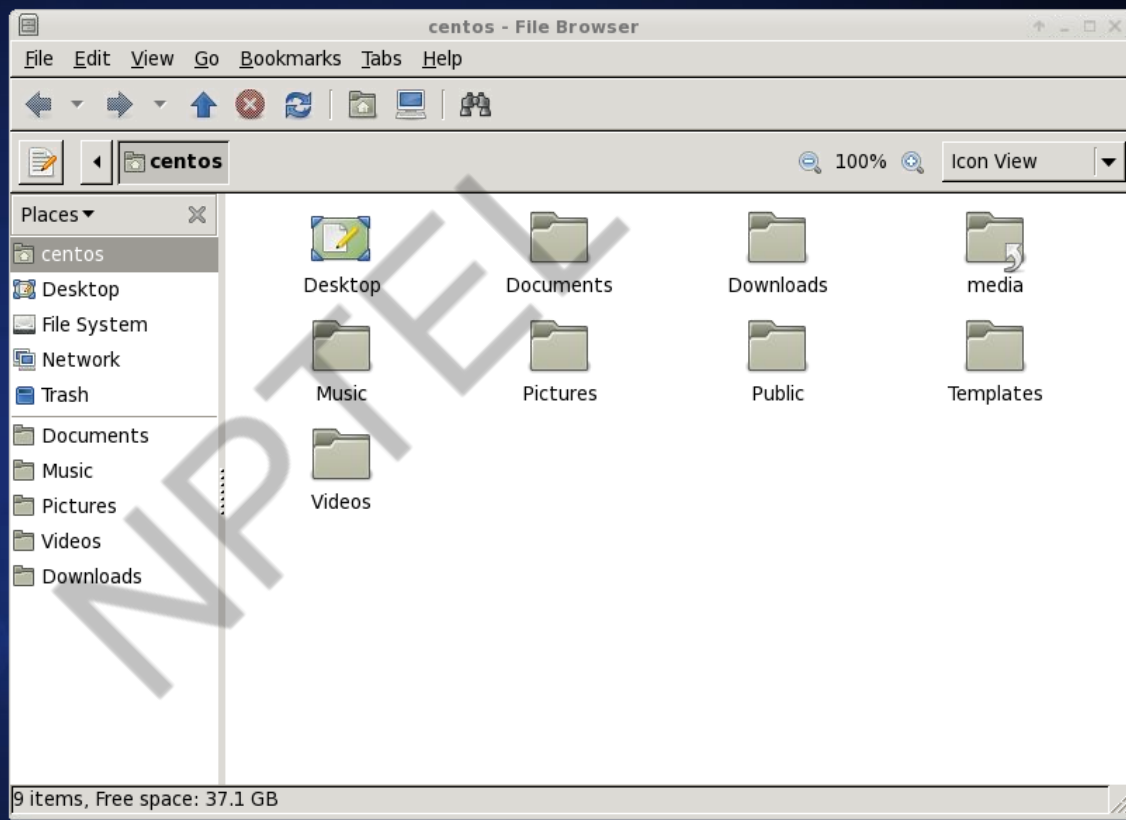
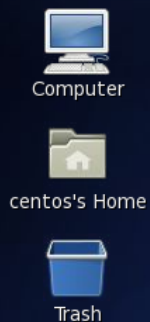
Delegation of GSSAPI credentials to the server

Use Proxy server for SSH connection

Session type

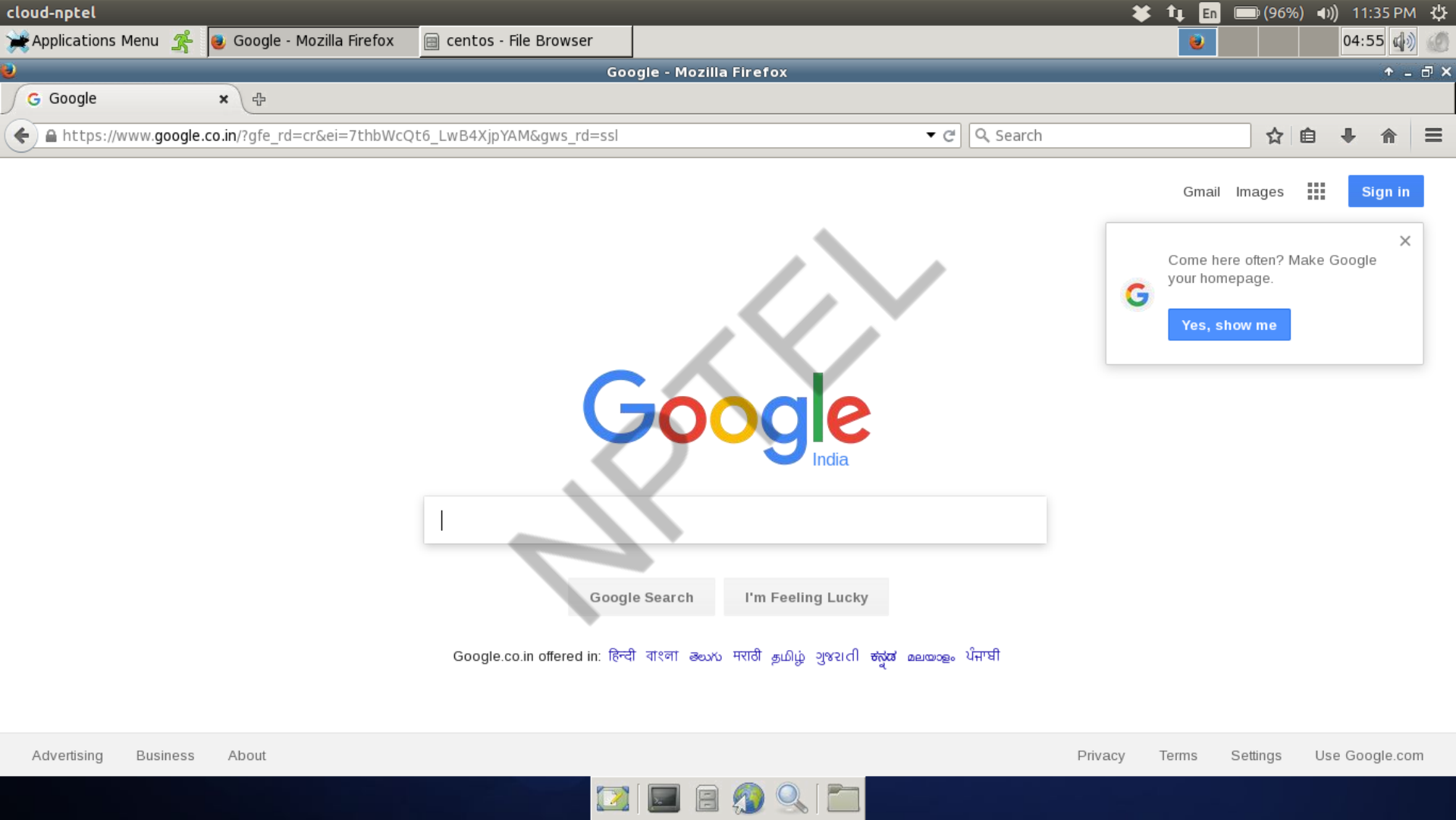
XFCE Command:

OK Cancel Defaults



Accessing newly created VM - 'cloud-nptel'





Come here often? Make Google your homepage. Yes, show me



Search input field

Google Search I'm Feeling Lucky

Google.co.in offered in: हिन्दी বাংলা తెలుగు मराठी தமிழ் ગુજરાતી ಕನ್ನಡ മലയാളം ਪੰਜਾਬੀ



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- 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

pe.com/watch?v=OL8prdrpJog

Search

soumya k ghosh

Sign in



Prof. Soumya K. Ghosh

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Autoplay

---

# VM Termination

---

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# Instances

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Soft Reboot Instances

Terminate Instances

<input type="checkbox"/>	Instance Name	Image Name	IP Address	Size	Key Pair	Status	Availability Zone	Task	Power State	Uptime	Actions
<input checked="" type="checkbox"/>	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
<input type="checkbox"/>	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
<input type="checkbox"/>	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
<input type="checkbox"/>	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
<input type="checkbox"/>	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
<input type="checkbox"/>	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
<input type="checkbox"/>	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
<input type="checkbox"/>	MeghadooNewMaster	CentOS_6.5_GUI	192.164.0.7 10.4.0.7	IITKGP_Meghadooop_Bigger   48GB RAM   8 VCPU   600.0GB Disk	-	Active	nova	None	Running	1 year, 4 months	Create Snapshot More
<input type="checkbox"/>	Meghadooop_18	CentOS_6.5_GUI	192.164.0.8 10.4.0.8	Meghadooop_new   8GB RAM   4 VCPU   90.0GB Disk	-	Active	nova	None	Running	1 year, 5 months	Create Snapshot More

# Instances

## Instances

<input type="checkbox"/>	Instance Name	Image	IP Address	Flavor	State	Availability Zone	OS Type	Architecture	Uptime	Actions
<input checked="" type="checkbox"/>	Cloud_nptel_1	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 minutes	Create Snapshot More
<input type="checkbox"/>	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
<input type="checkbox"/>	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
<input type="checkbox"/>	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
<input type="checkbox"/>	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
<input type="checkbox"/>	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
<input type="checkbox"/>	cc18_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
<input type="checkbox"/>	MeghadoolNewMaster	CentOS_6.5_GUI	192.164.111.111 10.4.2.55	IITKGP_Meghadool_Bigger   48GB RAM   8 VCPU   600.0GB Disk	Active	nova	None	Running	1 year, 4 months	Create Snapshot More
<input type="checkbox"/>	Meghadool_18	CentOS_6.5_GUI	192.164.111.105 10.4.2.52	Meghadool_new   8GB RAM   4 VCPU   90.0GB Disk	Active	nova	None	Running	1 year, 5 months	Create Snapshot More

### Confirm Terminate Instances x

You have selected "Cloud\_nptel\_1". Please confirm your selection. This action cannot be undone.

Cancel
Terminate Instances

Soft Reboot Instances

Terminate Instances

Project

Compute

Overview

Instances

Volumes

Images

Access &amp; Security

Network

Object Store

Orchestration

Admin

# Instances

## Instances

Instance Name

Filter



Filter

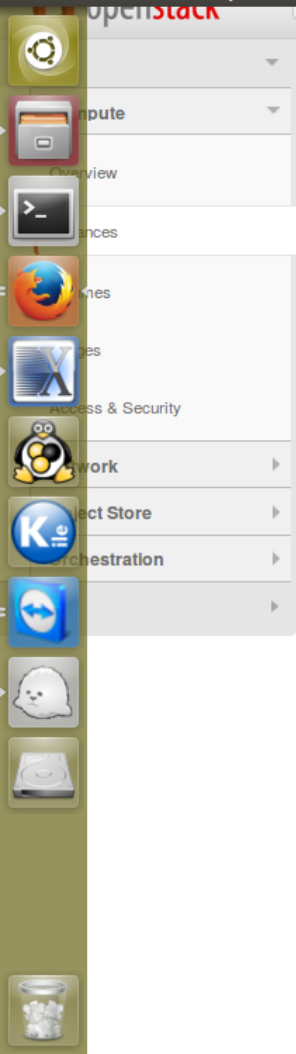
+ Launch Instance

Soft Reboot Instances

Terminate Instances

<input type="checkbox"/>	Instance Name	Image Name	IP Address	Size	Key Pair	Status	Availability Zone	Task	Power State	Uptime	Actions
<input type="checkbox"/>	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	
<input type="checkbox"/>	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
<input type="checkbox"/>	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
<input type="checkbox"/>	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
<input type="checkbox"/>	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
<input type="checkbox"/>	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
<input type="checkbox"/>	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
<input type="checkbox"/>	MeghadooNewMaster	CentOS_6.5_GUI	192.164.0.7 10.4.0.7	IITKGP_Meghadoo_Bigger   48GB RAM   8 VCPU   600.0GB Disk	-	Active	nova	None	Running	1 year, 4 months	Create Snapshot More
<input type="checkbox"/>	Meghadoo_18	CentOS_6.5_GUI	192.164.0.8 10.4.0.8	Meghadoo_new   8GB RAM   4 VCPU   90.0GB Disk	-	Active	nova	None	Running	1 year, 5 months	Create Snapshot More





## Instances

## Instances

Instance Name

Filter



Filter

+ Launch Instance

Soft Reboot Instances

Terminate Instances

<input type="checkbox"/>	Instance Name	Image Name	IP Address	Size	Key Pair	Status	Availability Zone	Task	Power State	Uptime	Actions
<input type="checkbox"/>	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
<input type="checkbox"/>	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
<input type="checkbox"/>	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
<input type="checkbox"/>	CL1_R_SERVER1	Ubuntu_New_X2Go	192.164.0.4 10.4.0.4	IITKGP_xlarge   32GB RAM   8 VCPU   60.0GB Disk	-	Active	nova	None	Running	9 months, 1 week	Create Snapshot More
<input type="checkbox"/>	Harshit_Ulkarsh_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
<input type="checkbox"/>	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
<input type="checkbox"/>	MeghadooNewMaster	CentOS_6.5_GUI	192.164.0.7 10.4.0.7	IITKGP_Meghadoo_Bigger   48GB RAM   8 VCPU   600.0GB Disk	-	Active	nova	None	Running	1 year, 4 months	Create Snapshot More
<input type="checkbox"/>	Meghadoo_18	CentOS_6.5_GUI	192.164.0.8 10.4.0.8	Meghadoo_new   8GB RAM   4 VCPU   90.0GB Disk	-	Active	nova	None	Running	1 year, 5 months	Create Snapshot More
<input type="checkbox"/>	Meghadoo_19	CentOS_6.5_GUI	192.164.0.9 10.4.0.9	Meghadoo_new   8GB RAM   4 VCPU   90.0GB Disk	-	Active	nova	None	Running	1 year, 5 months	Create Snapshot More

# Thank You!





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# CLOUD COMPUTING

## CREATE A PYTHON WEB APP IN MICROSOFT AZURE:

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

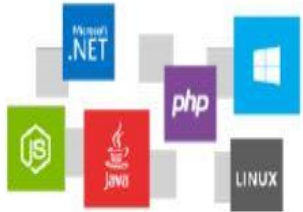
# Microsoft Azure : An overview

- 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.

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

# Deploy anywhere with your choice of tools

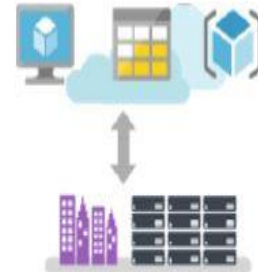
- Connecting cloud and on-premises with consistent hybrid cloud capabilities and using open source technologies



Build your apps, your way



Connect on-premises data and apps



Extend the cloud on-premises

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.



Achieve global scale in local regions



Detect and mitigate threats



Rely on the most trusted cloud

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



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# 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.



Build apps quickly and easily



Manage apps proactively



Deliver mobile apps seamlessly

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

## 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

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.

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



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# Azure Web Apps

- Highly scalable, Self-patching web hosting service.
- Prerequisites
  - ✓ To complete this demo:
    - ➔ Install Git
    - ➔ Install Python

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



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

Sign in to your account

Microsoft Corporation [US] | [https://login.microsoftonline.com/common/oauth2/authorize?resource=https%3a%2f%2fmanagement.core.windows.net%2f&response\\_mode=form\\_post&res](https://login.microsoftonline.com/common/oauth2/authorize?resource=https%3a%2f%2fmanagement.core.windows.net%2f&response_mode=form_post&res)

Cloud optimize your business

Microsoft Azure

nath.shubha@gmail...

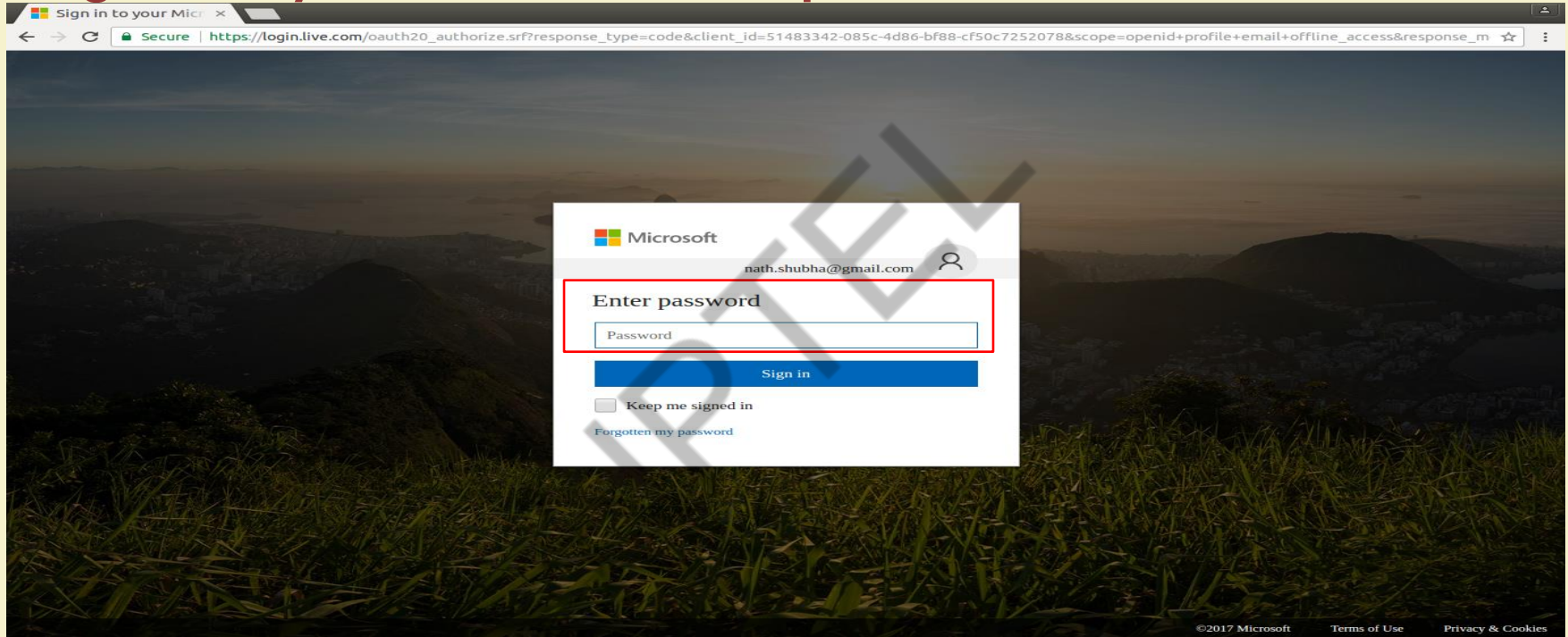
+ Use another account

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Terms of use Privacy & Cookies

Microsoft

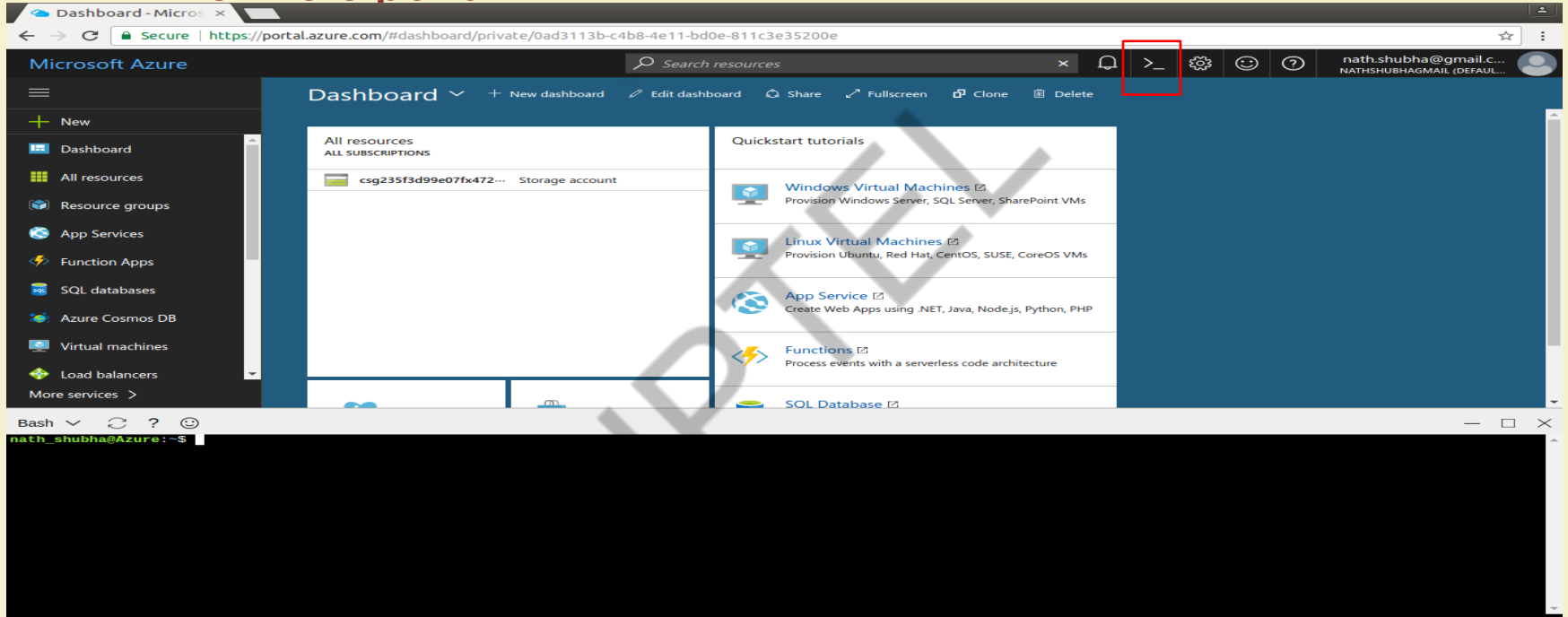
Ref: <https://docs.microsoft.com/en-us/azure/app-service-web/app-service-web-get-started-python>

# 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



The screenshot shows the Microsoft Azure portal dashboard. The top navigation bar includes the Microsoft Azure logo, a search bar, and user information for 'nath.shubha@gmail.c...'. A red box highlights the Cloud Shell icon (a terminal window) in the top right corner of the dashboard. The main content area displays 'All resources' and 'Quickstart tutorials'.

**All resources**  
ALL SUBSCRIPTIONS

Storage account	csg235f3d99e07fx472...
-----------------	------------------------

**Quickstart tutorials**

- Windows Virtual Machines: Provision Windows Server, SQL Server, SharePoint VMs
- Linux Virtual Machines: Provision Ubuntu, Red Hat, CentOS, SUSE, CoreOS VMs
- App Service: Create Web Apps using .NET, Java, Node.js, Python, PHP
- Functions: Process events with a serverless code architecture
- SQL Database

**Bash**  
nath\_shubha@Azure: ~\$

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.

```
root@shubha-OptiPlex-9020: /home/shubha
root@shubha-OptiPlex-9020:/home/shubha# git clone https://github.com/Azure-Samples/python-docs-hello-world
Cloning into 'python-docs-hello-world'...
remote: Counting objects: 18, done.
remote: Total 18 (delta 0), reused 0 (delta 0), pack-reused 18
Unpacking objects: 100% (18/18), done.
Checking connectivity... done.
root@shubha-OptiPlex-9020:/home/shubha#
```

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

```
root@shubha-OptiPlex-9020: /home/shubha/python-docs-hello-world  
root@shubha-OptiPlex-9020:/home/shubha# cd python-docs-hello-world/  
root@shubha-OptiPlex-9020:/home/shubha/python-docs-hello-world# █
```

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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>



# 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)
```

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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.



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

# Configure a deployment user using the command

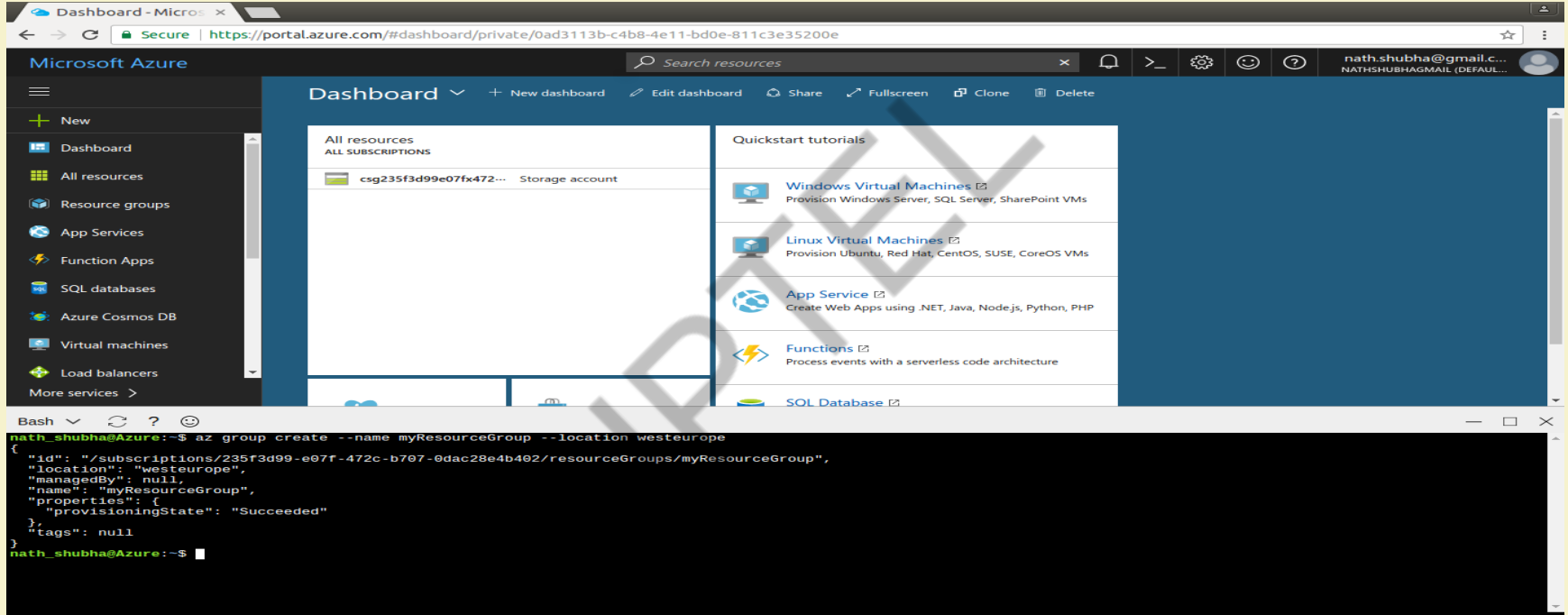
- A deployment user is required for FTP and local Git deployment to a web app.

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

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.



The screenshot displays the Microsoft Azure portal dashboard. The left sidebar shows navigation options like 'New', 'Dashboard', 'All resources', 'Resource groups', 'App Services', 'Function Apps', 'SQL databases', 'Azure Cosmos DB', 'Virtual machines', 'Load balancers', and 'More services'. The main content area is titled 'Dashboard' and includes a search bar, 'New dashboard', 'Edit dashboard', 'Share', 'Fullscreen', 'Clone', and 'Delete' options. Below this, there are two main sections: 'All resources' (showing a list of resources under 'ALL SUBSCRIPTIONS') and 'Quickstart tutorials' (listing various services like Windows Virtual Machines, Linux Virtual Machines, App Service, Functions, and SQL Database). A terminal window at the bottom shows the command to create a resource group and its successful output.

```
nath_shubha@Azure:~$ az group create --name myResourceGroup --location westeurope
{
  "id": "/subscriptions/235f3d99-e07f-472c-b707-0dac28e4b402/resourceGroups/myResourceGroup",
  "location": "westeurope",
  "managedBy": null,
  "name": "myResourceGroup",
  "properties": {
    "provisioningState": "Succeeded"
  },
  "tags": null
}
nath_shubha@Azure:~$
```

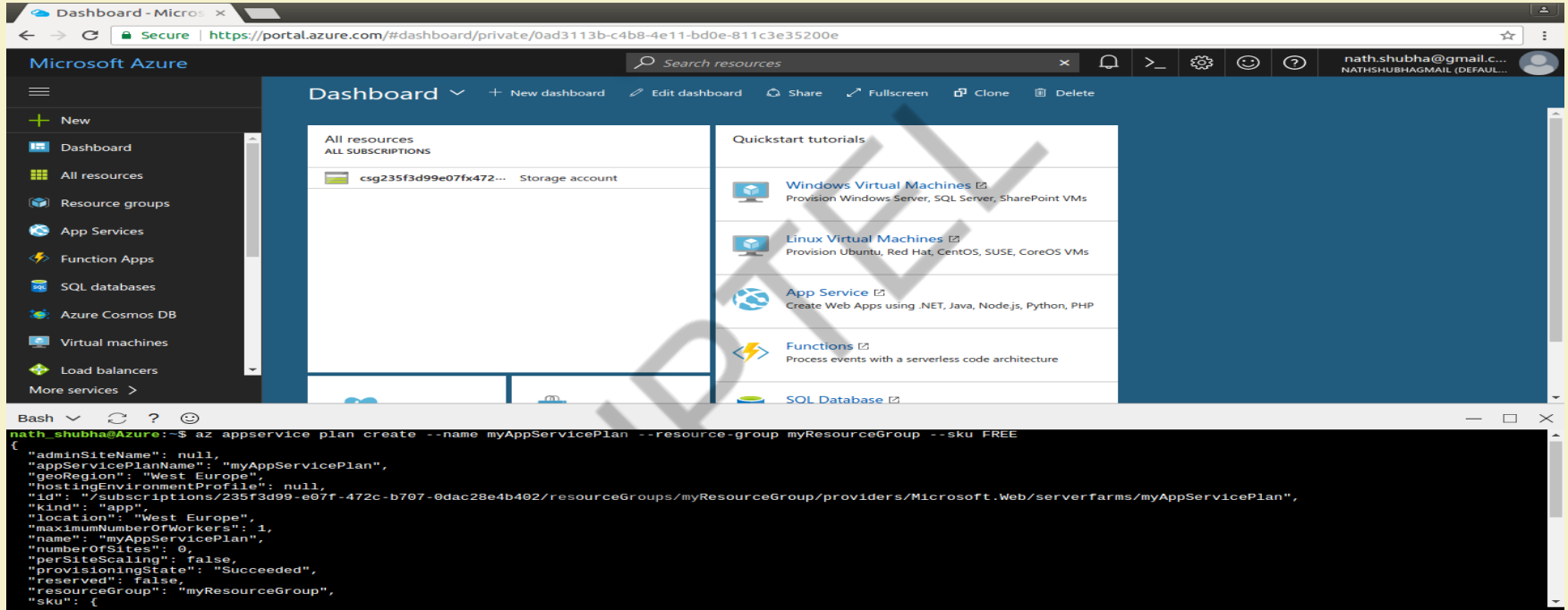
Ref: <https://docs.microsoft.com/en-us/azure/app-service-web/app-service-web-get-started-python>

# 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>

# Create an Azure App Service plan



The screenshot shows the Azure portal dashboard. The left sidebar contains navigation options: New, Dashboard, All resources, Resource groups, App Services, Function Apps, SQL databases, Azure Cosmos DB, Virtual machines, Load balancers, and More services. The main content area displays 'All resources' under 'ALL SUBSCRIPTIONS' with a table listing a storage account. Below this is a 'Quickstart tutorials' section with links for Windows Virtual Machines, Linux Virtual Machines, App Service, Functions, and SQL Database. At the bottom, a terminal window shows the command to create an App Service plan and its output.

```
nath_shubha@Azure:~$ az appservice plan create --name myAppServicePlan --resource-group myResourceGroup --sku FREE
{
  "adminSiteName": null,
  "appServicePlanName": "myAppServicePlan",
  "geoRegion": "West Europe",
  "hostingEnvironmentProfile": null,
  "id": "/subscriptions/235f3d99-e07f-472c-b707-0dac28e4b402/resourceGroups/myResourceGroup/providers/Microsoft.Web/serverFarms/myAppServicePlan",
  "kind": "app",
  "location": "West Europe",
  "maximumNumberOfWorkers": 1,
  "name": "myAppServicePlan",
  "numberOfSites": 0,
  "perSiteScaling": false,
  "provisioningState": "Succeeded",
  "reserved": false,
  "resourceGroup": "myResourceGroup",
  "sku": {
```

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.

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

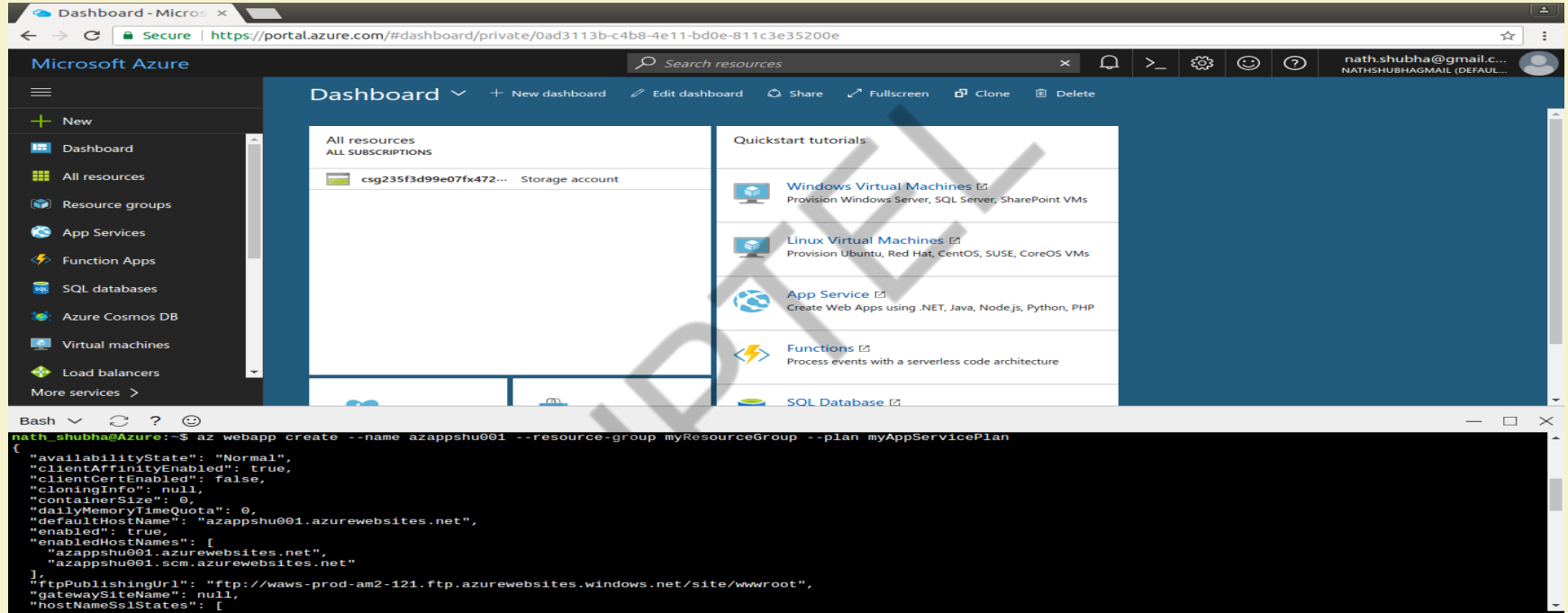


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# Create a web app



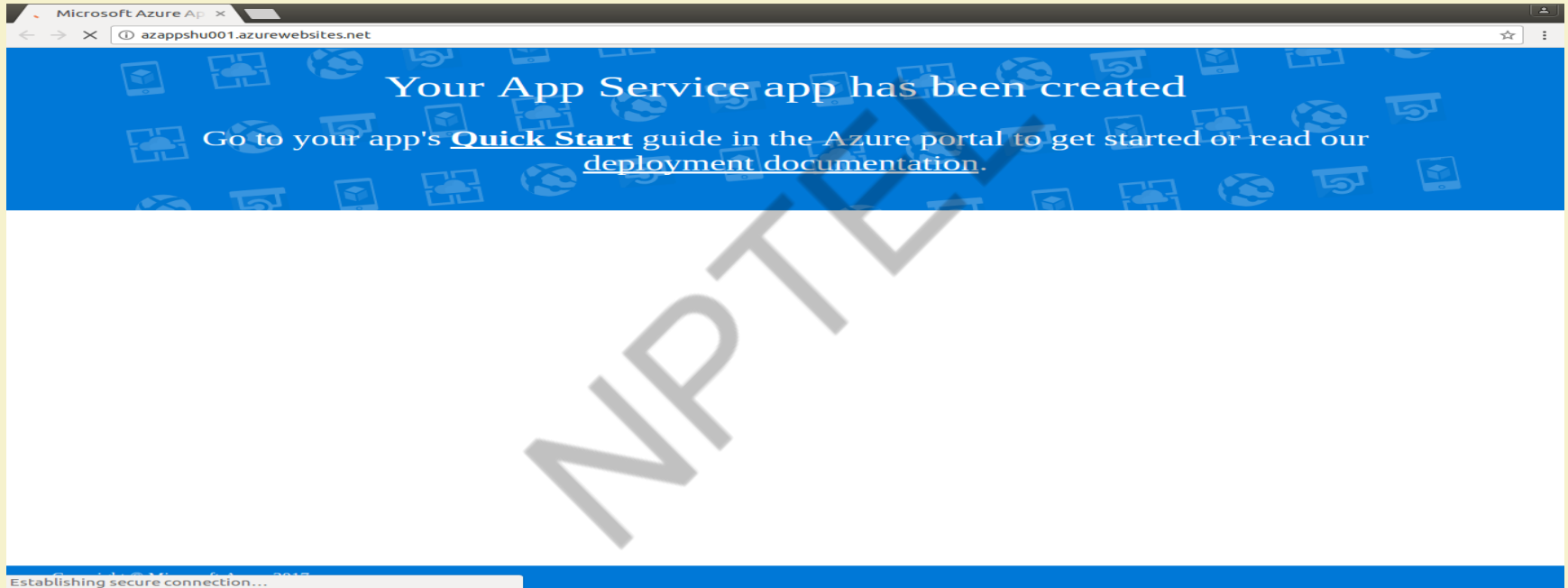
The screenshot shows the Microsoft Azure portal dashboard. The left sidebar contains navigation options: New, Dashboard, All resources, Resource groups, App Services, Function Apps, SQL databases, Azure Cosmos DB, Virtual machines, and Load balancers. The main content area displays 'All resources' for 'ALL SUBSCRIPTIONS' with a table listing a storage account. To the right, 'Quickstart tutorials' are listed: Windows Virtual Machines, Linux Virtual Machines, App Service, Functions, and SQL Database. At the bottom, a terminal window shows the command: `nath_shubha@Azure:~$ az webapp create --name azappshu001 --resource-group myResourceGroup --plan myAppServicePlan` and its output as a JSON object.

```
{
  "availabilityState": "Normal",
  "clientAffinityEnabled": true,
  "clientCertEnabled": false,
  "cloningInfo": null,
  "containerSize": 0,
  "dailyMemoryTimeQuota": 0,
  "defaultHostName": "azappshu001.azurewebsites.net",
  "enabled": true,
  "enabledHostNames": [
    "azappshu001.azurewebsites.net",
    "azappshu001.scm.azurewebsites.net"
  ],
  "ftpPublishingUrl": "ftp://waws-prod-am2-121.ftp.azurewebsites.windows.net/site/wwwroot",
  "gatewaySiteName": null,
  "hostNameSslStates": [
```

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

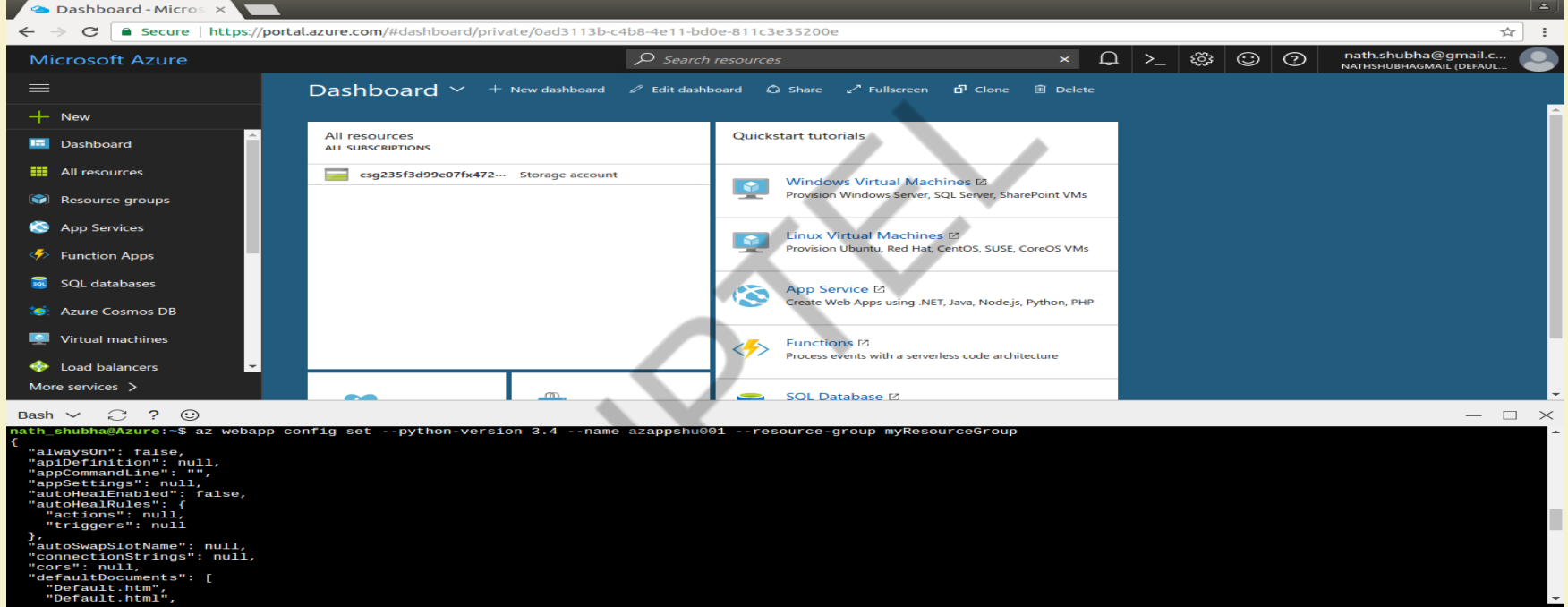


Browse to the site [azappshu001.azurewebsites.net](https://azappshu001.azurewebsites.net) to see your newly created web app.



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

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



The screenshot shows the Microsoft Azure portal dashboard. The main content area displays a list of resources under the heading "All resources ALL SUBSCRIPTIONS", including a storage account. On the right, there are quickstart tutorials for Windows Virtual Machines, Linux Virtual Machines, App Service, Functions, and SQL Database. At the bottom, a terminal window is open, showing the command:

```
nath_shubha@Azure:~$ az webapp config set --python-version 3.4 --name azappshu001 --resource-group myResourceGroup
```

The terminal output shows the configuration details for the web app, including settings for alwaysOn, appDefinition, appSettings, autoHealRules, autoSwapSlotName, connectionStrings, cors, defaultDocuments, and triggers.

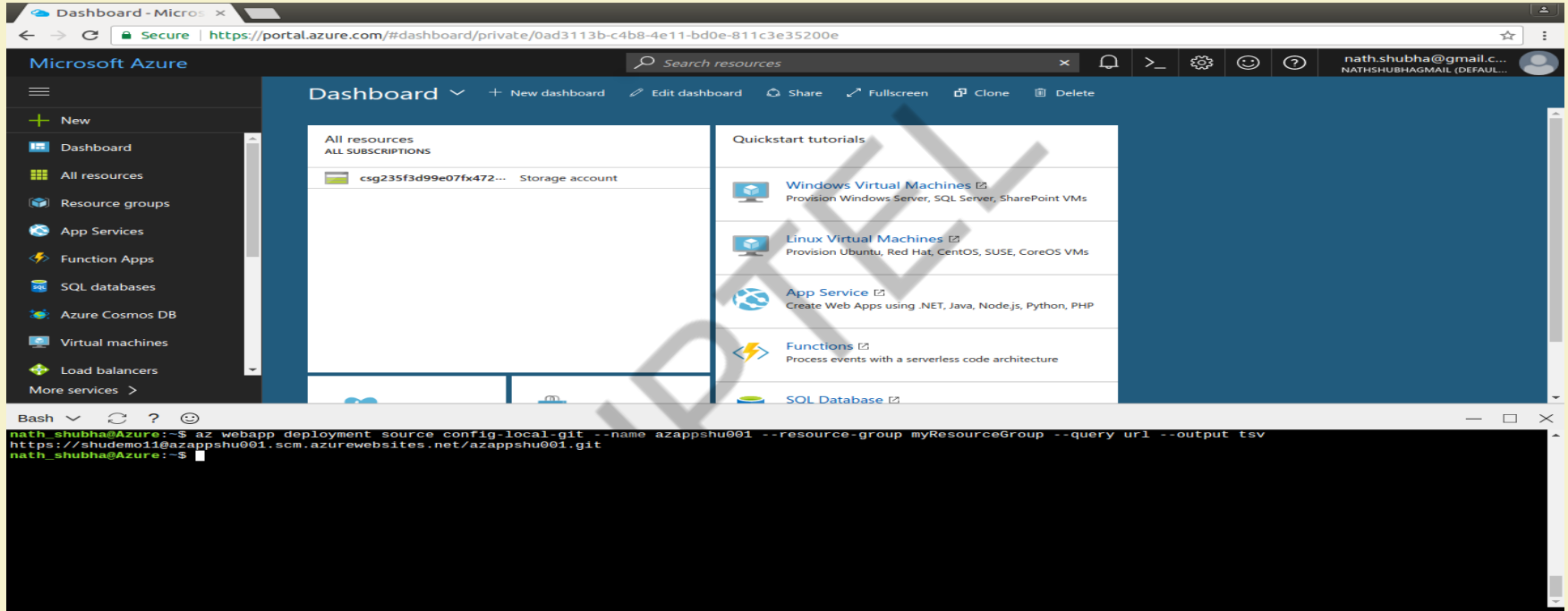
Ref: <https://docs.microsoft.com/en-us/azure/app-service-web/app-service-web-get-started-python>

# 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.

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

# Configure local Git deployment



The image shows a screenshot of the Microsoft Azure portal dashboard. The dashboard displays a list of resources under the heading "All resources ALL SUBSCRIPTIONS", including a storage account named "csg235f3d99e07fx472...". On the right side, there are quickstart tutorials for Windows Virtual Machines, Linux Virtual Machines, App Service, Functions, and SQL Database.

Below the dashboard, a terminal window is open, showing the command used to configure local Git deployment:

```
nath_shubha@Azure:~$ az webapp deployment source config-local-git --name azappshu001 --resource-group myResourceGroup --query url --output tsv
https://shudemo11@azappshu001.scm.azurewebsites.net/azappshu001.git
nath_shubha@Azure:~$
```

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.

```
root@shubha-OptiPlex-9020: /home/shubha/python-docs-hello-world
root@shubha-OptiPlex-9020:/home/shubha/python-docs-hello-world# git remote add azure https://shudemo11@azappshu001.scm.azurewebsites.net/azappshu001.git
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>

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://shudem011@azappshu001.scm.azurewebsites.net':
Counting objects: 18, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (18/18) 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.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: 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
```

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

# Browse to the app at azappshu001.azurewebsites.net



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

# Update and redeploy the code

```
root@shubha-OptiPlex-9020: /home/shubha/python-docs-hello-world  
root@shubha-OptiPlex-9020: /home/shubha/python-docs-hello-world# nano main.py
```

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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()
```

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**^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    **^M** Replace    **^U** Uncut Text    **^T** To Linter    **^L** Go To Line    **^V** Next Page

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#
```

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
```

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`



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>

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# Thank You!!



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# Google Cloud Platform (GCP)

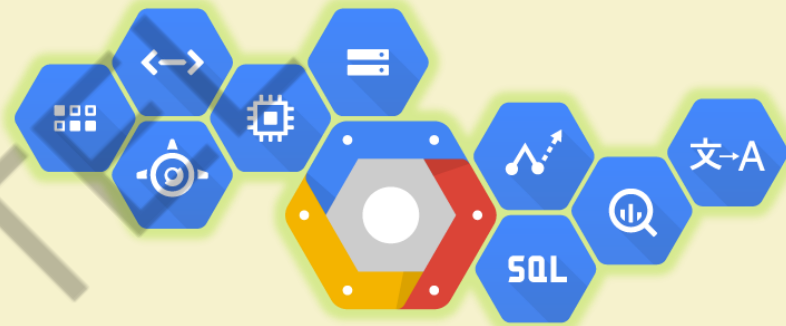
**Prof. Soumya K Ghosh**

Department of Computer Science and Engineering

IIT KHARAGPUR

# 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



# Google Cloud Platform Services!



# 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

# 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

# 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

# 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.

# 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.

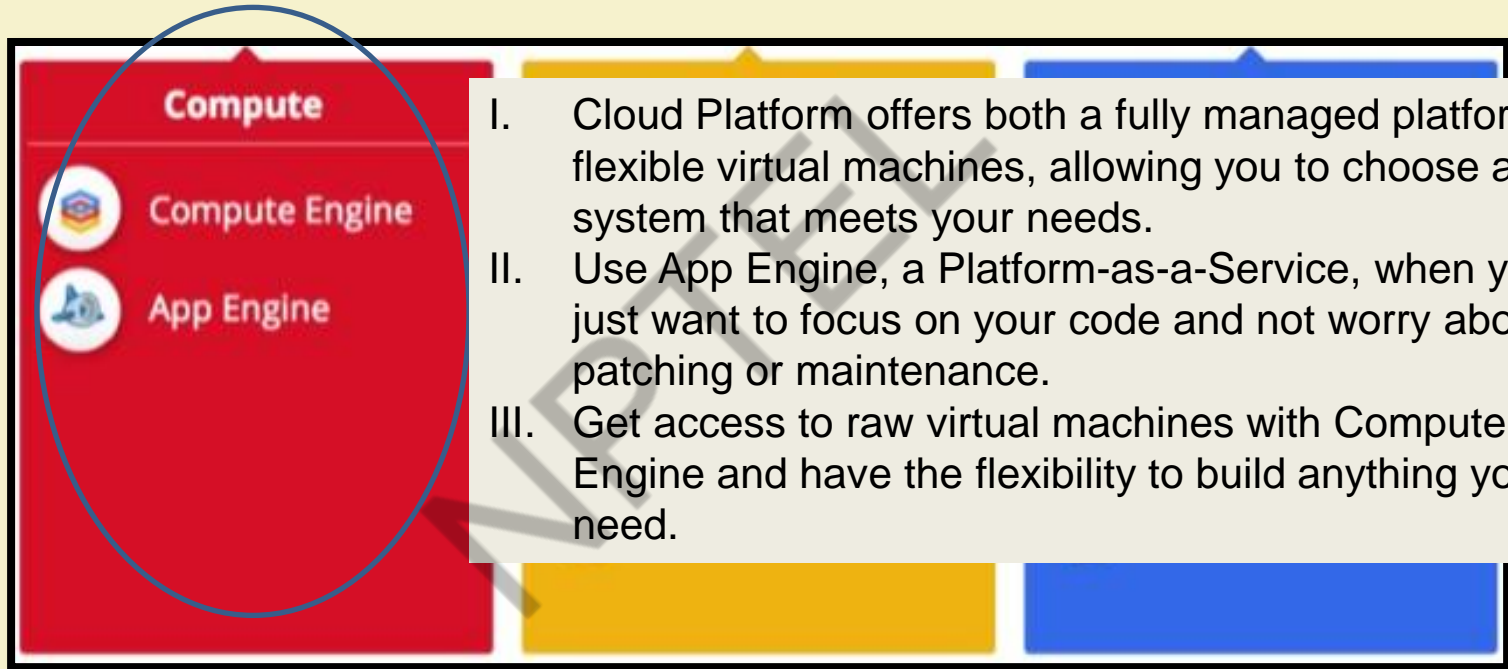
- ✓ CPU, Memory and Disk
- ✓ Global Network
- ✓ Transparent maintenance

# 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.

# Google Cloud Platform Services



The image shows a screenshot of the Google Cloud Platform services menu. The 'Compute' category is highlighted with a blue circle. Below it, 'Compute Engine' and 'App Engine' are listed with their respective icons. To the right of the screenshot, there is a list of three points describing the 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.

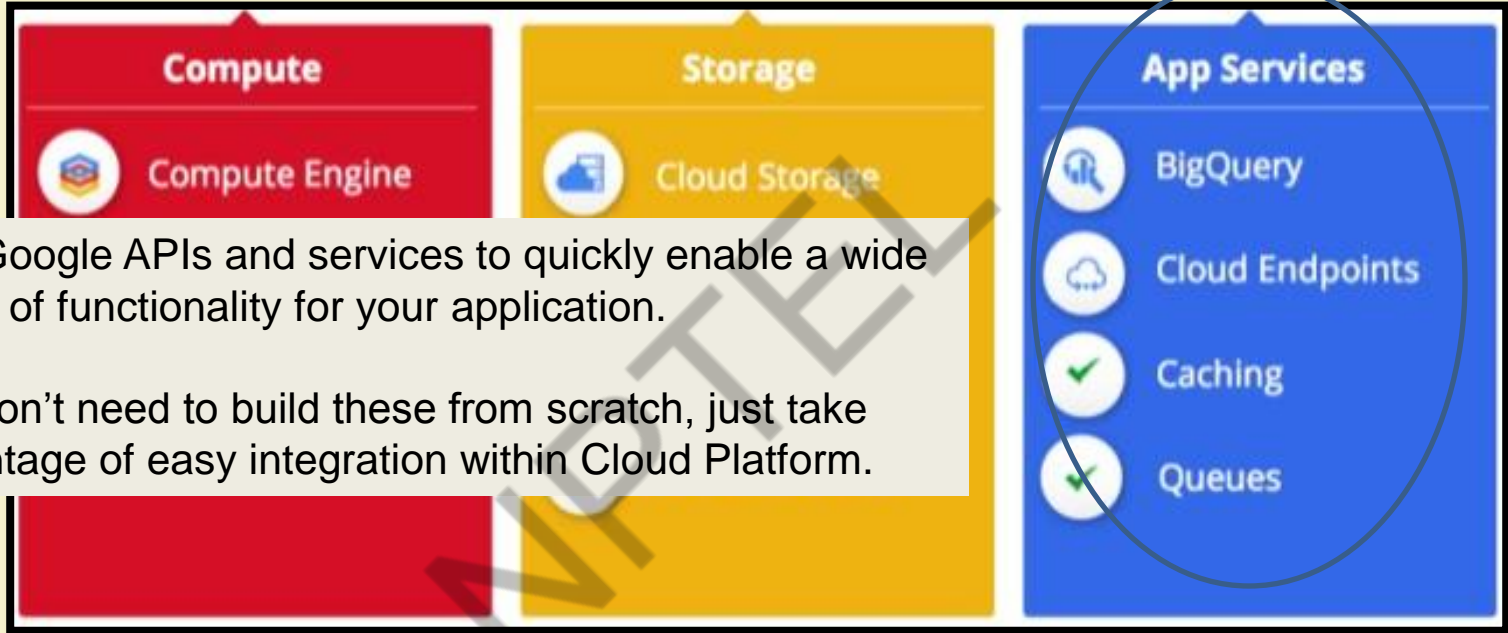


# Google Cloud Platform Services



- 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.

# 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.

# 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**.

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

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

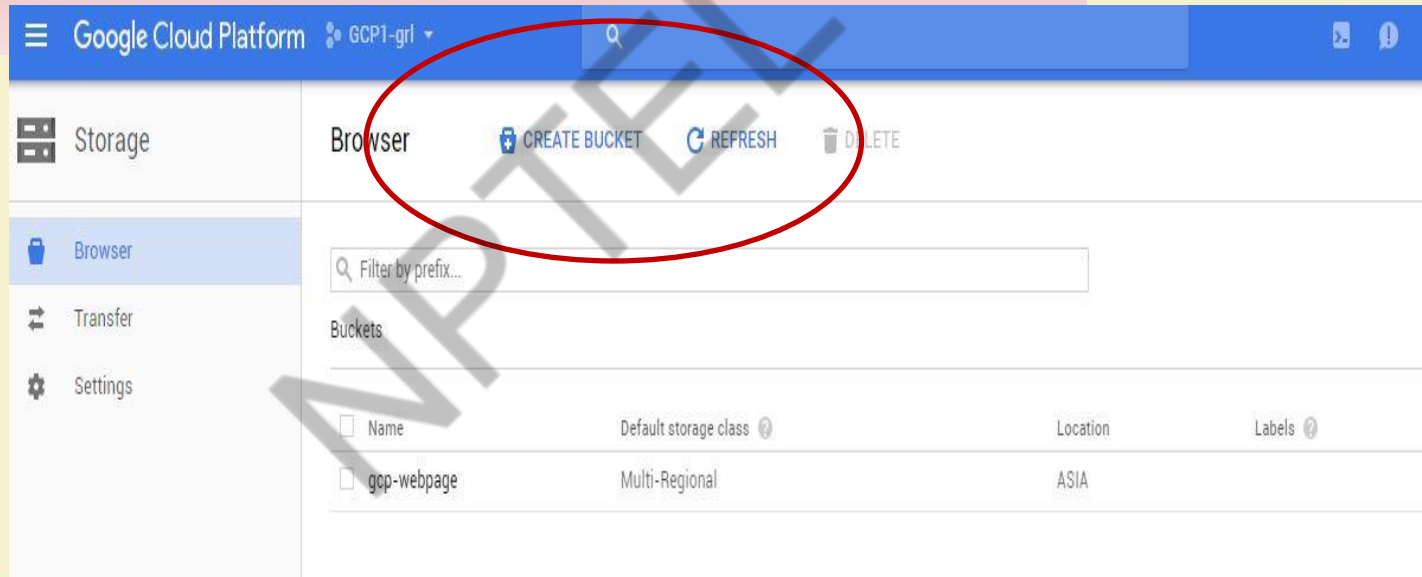


*Example 1: Host your **web-page** in Google Cloud Platform*



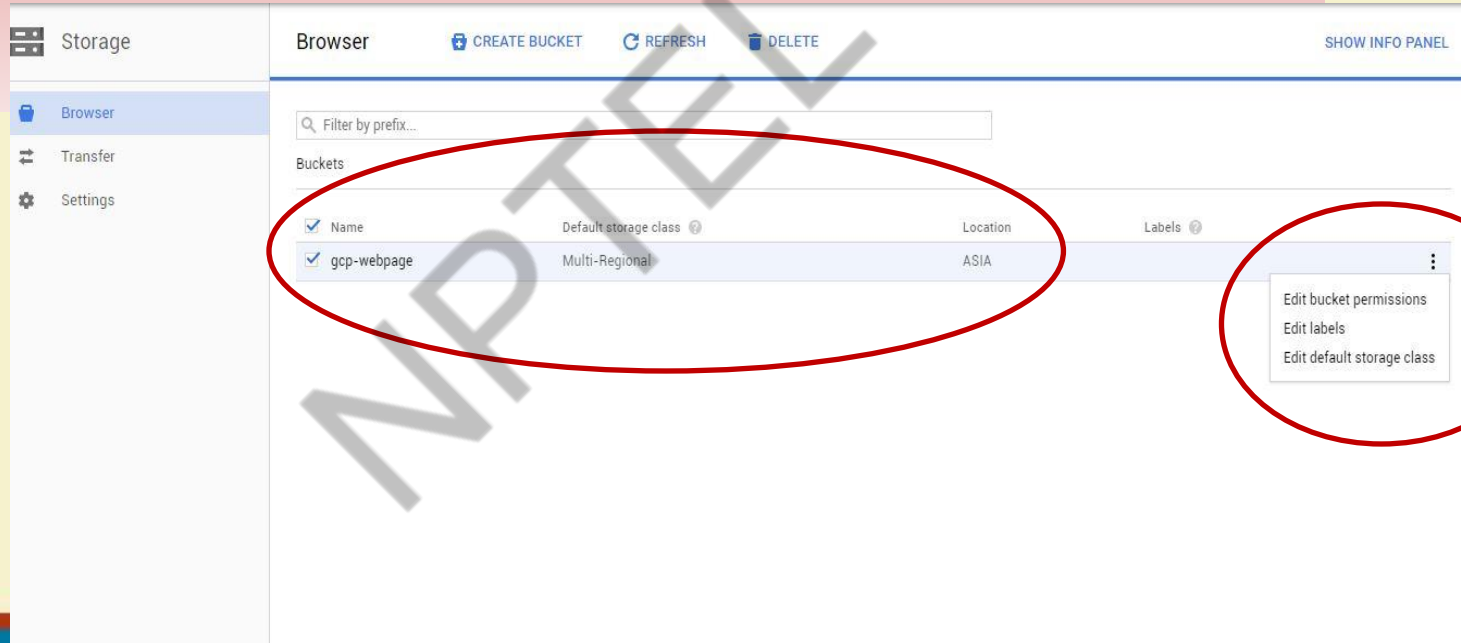
## An easy example: Host your *web-page* inside *Google Cloud Platform*

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



## 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**.



The screenshot shows the Google Cloud Storage console interface. On the left, there is a navigation menu with 'Storage' selected, and sub-items for 'Browser', 'Transfer', and 'Settings'. The main area is titled 'Browser' and contains a search bar 'Filter by prefix...', a 'CREATE BUCKET' button, a 'REFRESH' button, and a 'DELETE' button. Below this is a table of buckets. The table has columns for 'Name', 'Default storage class', 'Location', and 'Labels'. The row for the bucket 'gcp-webpage' is highlighted, and a red circle is drawn around it. To the right of this row, a 'More actions' menu is open, also circled in red, showing options: 'Edit bucket permissions', 'Edit labels', and 'Edit default storage class'.

<input checked="" type="checkbox"/>	Name	Default storage class	Location	Labels
<input checked="" type="checkbox"/>	gcp-webpage	Multi-Regional	ASIA	

## 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!

Check whether all are shared publicly!

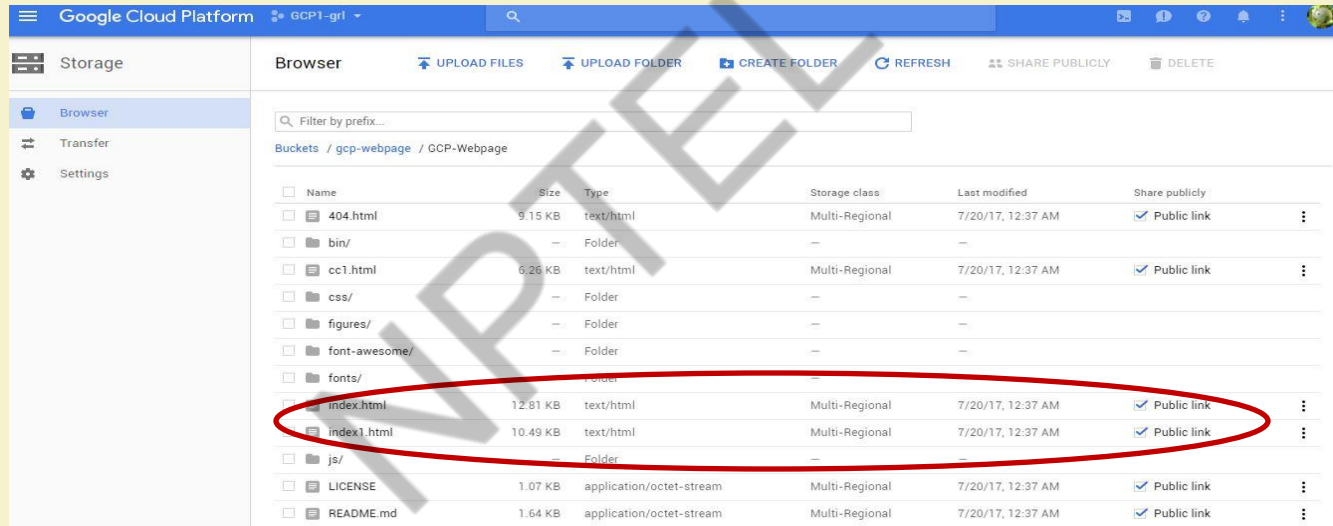
Upload all files/figures of your web-site!

Name	Size	Type	Storage class	Last modified	Share publicly
404.html	9.15 KB	text/html	Multi-Regional	7/20/17, 12:37 AM	<input checked="" type="checkbox"/> Public link
bin/	—	Folder	—	—	
cc1.html	6.26 KB	text/html	Multi-Regional	7/20/17, 12:37 AM	<input checked="" type="checkbox"/> Public link
css/	—	Folder	—	—	
figures/	—	Folder	—	—	
font-awesome/	—	Folder	—	—	
fonts/	—	Folder	—	—	
index.html	12.81 KB	text/html	Multi-Regional	7/20/17, 12:37 AM	<input checked="" type="checkbox"/> Public link
index1.html	10.49 KB	text/html	Multi-Regional	7/20/17, 12:37 AM	<input checked="" type="checkbox"/> Public link
js/	—	Folder	—	—	
LICENSE	1.07 KB	application/octet-stream	Multi-Regional	7/20/17, 12:37 AM	<input checked="" type="checkbox"/> Public link
README.md	1.64 KB	application/octet-stream	Multi-Regional	7/20/17, 12:37 AM	<input checked="" type="checkbox"/> Public link



# 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*



The screenshot shows the Google Cloud Platform Storage interface. The left sidebar contains 'Storage', 'Browser', 'Transfer', and 'Settings'. The main area is titled 'Browser' and shows a list of files in a bucket named 'gcp-webpage / GCP-Webpage'. The files are listed in a table with columns for Name, Size, Type, Storage class, Last modified, and Share publicly. The 'index.html' and 'index1.html' files are circled in red, indicating they are the focus of the instruction.

Name	Size	Type	Storage class	Last modified	Share publicly
404.html	9.15 KB	text/html	Multi-Regional	7/20/17, 12:37 AM	<input checked="" type="checkbox"/> Public link
bin/	-	Folder	-	-	
cc1.html	6.26 KB	text/html	Multi-Regional	7/20/17, 12:37 AM	<input checked="" type="checkbox"/> Public link
css/	-	Folder	-	-	
figures/	-	Folder	-	-	
font-awesome/	-	Folder	-	-	
fonts/	-	Folder	-	-	
index.html	12.81 KB	text/html	Multi-Regional	7/20/17, 12:37 AM	<input checked="" type="checkbox"/> Public link
index1.html	10.49 KB	text/html	Multi-Regional	7/20/17, 12:37 AM	<input checked="" type="checkbox"/> Public link
js/	-	Folder	-	-	
LICENSE	1.07 KB	application/octet-stream	Multi-Regional	7/20/17, 12:37 AM	<input checked="" type="checkbox"/> Public link
README.md	1.64 KB	application/octet-stream	Multi-Regional	7/20/17, 12:37 AM	<input checked="" type="checkbox"/> Public link

And you are ready to go! 😊

Secure | <https://storage.googleapis.com/gcp-webpage/GCP-Webpage/index1.html>

Hi there!

Home Summary ▾

<https://storage.googleapis.com/gcp-webpage/GCP-Webpage/index1.html>

Data and Computing : Up in the Cloud!

## Welcome to Cloud Computing NPTEL Course!

### ✓ About this Course!

This course will introduce various aspects of cloud computing, including fundamentals, management issues, security challenges and future research trends. This will help students (both UG and PG levels) and researchers to use and explore the cloud computing platforms.

### 📌 Course PRE-REQUISITES & Suggested Reading

Course Pre-requisites:

- **Basics of Computer Architecture and organization**
- **Networking**

### 📌 Course Instructor & Certification

**Taught by:** Prof. Soumya K Ghosh, Dept. of CSE, IIT Khargpur

**Certification Exam:** Exams will be on 22 October 2017. Time: Shift 1: 9am-12 noon; Shift 2: 2pm-5pm.

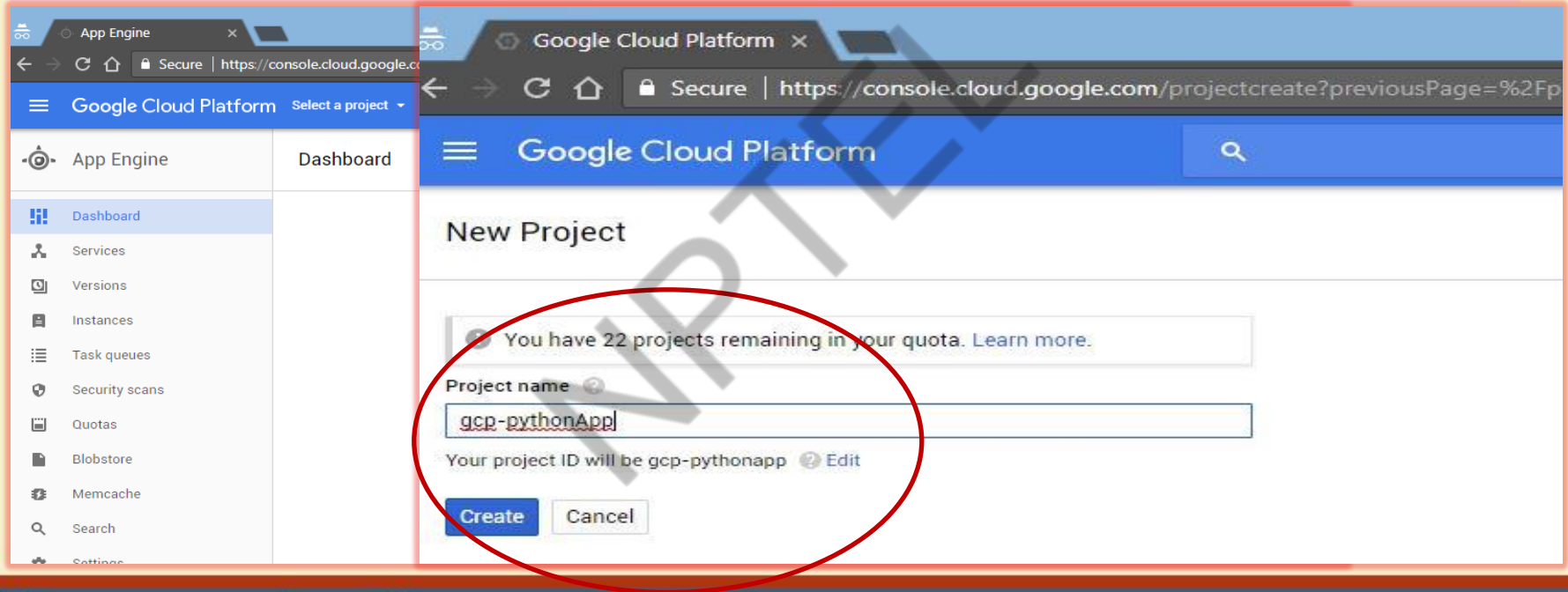
Final score will be calculated as: 75% assignment

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



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

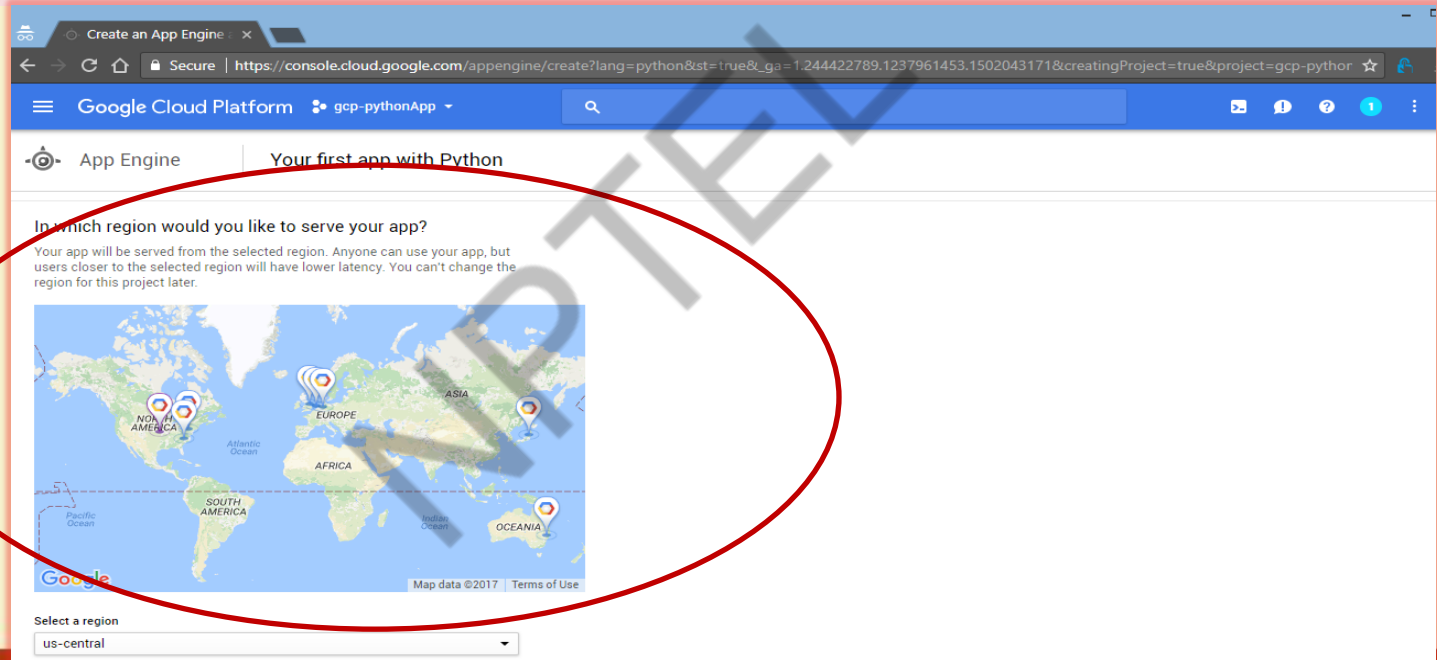
i) Open the Google Cloud Platform Console & create a new project using *Cloud Platform project and App Engine application*



The screenshot displays the Google Cloud Platform Console interface. On the left, a navigation sidebar shows 'App Engine' selected. The main content area is titled 'New Project'. A message at the top indicates 'You have 22 projects remaining in your quota. Learn more.' Below this, the 'Project name' field is highlighted with a red circle and contains the text 'gcp-pythonApp'. The project ID is shown as 'gcp-pythonapp'. At the bottom, there are 'Create' and 'Cancel' buttons.

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

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



Create an App Engine


Secure | [https://console.cloud.google.com/appengine/create?lang=python&st=true&\\_ga=1.244422789.1237961453.1502043171&creatingProject=true&project=gcp-pythonApp](https://console.cloud.google.com/appengine/create?lang=python&st=true&_ga=1.244422789.1237961453.1502043171&creatingProject=true&project=gcp-pythonApp)

Google Cloud Platform | gcp-pythonApp

App Engine | Your first app with Python

In which region would you like to serve your app?

Your app will be served from the selected region. Anyone can use your app, but users closer to the selected region will have lower latency. You can't change the region for this project later.

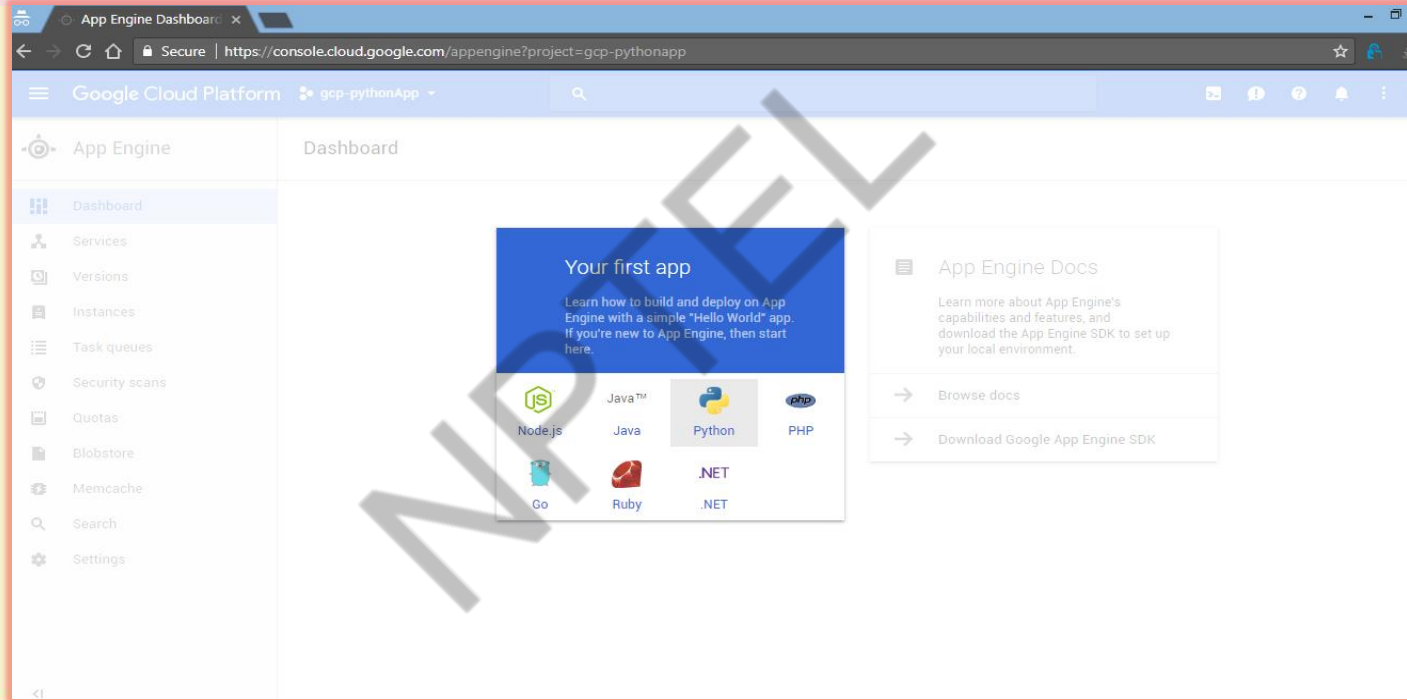


Select a region

us-central

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

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



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

The screenshot shows the Google Cloud console interface. At the top, the browser address bar displays `https://console.cloud.google.com/appengine?project=gcp-pythonapp`. A red circle highlights the 'Google Cloud Shell' button in the top navigation bar. Below this, a modal window titled 'Google Cloud Shell will appear' is shown, containing a progress indicator: '... Connecting: Provisioning your Google Cloud Shell machine...'. Below the modal, a terminal window is open with the text: 'Welcome to Cloud Shell! Type "help" to get started. sg\_researchwork@gcp-pythonapp:~\$'. At the bottom right of the console, there are buttons for 'CANCEL TUTORIAL' and 'SEND FEEDBACK'.



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

gcp-pythonapp x +

```
Welcome to Cloud Shell! Type "help" to get started.
sg_researchwork@gcp-pythonapp:~$ TUTORIALDIR~/src/gcp-pythonapp/python_gae_quickstart-2017-08-07-01-48
sg_researchwork@gcp-pythonapp:~$ git clone https://github.com/GoogleCloudPlatform/python-docs-samples $TUTORIALDIR
Cloning into '/home/sg_researchwork/src/gcp-pythonapp/python_gae_quickstart-2017-08-07-01-48'...
remote: Counting objects: 11889, done.
remote: Compressing objects: 100% (94/94), done.
remote: Total 11889 (delta 18), reused 83 (delta 13), pack-reused 11756
Receiving objects: 100% (11889/11889), 3.33 MiB | 2.88 MiB/s, done.
Resolving deltas: 100% (6240/6240), done.
sg_researchwork@gcp-pythonapp:~$
```



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

gcp-pythonapp x +

```
sg_research # you may not use this file except in compliance with the License.
sg_research # You may obtain a copy of the License at
sg_research #
runtime: py # http://www.apache.org/licenses/LICENSE-2.0
api_version #
threadsafe: # Unless required by applicable law or agreed to in writing, software
handlers: # distributed under the License is distributed on an "AS IS" BASIS,
- url: /* # WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
script: m # See the License for the specific language governing permissions and
sg_research # 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_gcp_quickstart-2017-08-07-01-48/appengine/standard/hello_world$
```

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`**



A terminal window titled "gcp-pythonapp x" showing the execution of the command `dev_appserver.py $PWD`. The command is circled in white. The output shows several log messages:

```
sg_researchwork@gcp-pythonapp:~/src/gcp-pythonapp/python_gae_quickstart-2017-08-07-01-48/appengine/standard/hello_world$ dev_appserver.py $PWD
INFO     2017-08-06 20:26:05,853 devappserver2.py:116] Skipping SDK update check.
WARNING  2017-08-06 20:26:06,452 simple_search_stub.py:1169] Could not read search indexes from /tmp/appengine.None.sg_researchwork/search_indexes
INFO     2017-08-06 20:26:06,454 api_server.py:313] Starting API server at: http://0.0.0.0:54678
WARNING  2017-08-06 20:26:06,454 dispatcher.py:287] Your python27 micro version is below 2.7.12, our current production version.
INFO     2017-08-06 20:26:06,457 dispatcher.py:226] Starting module "default" running at: http://0.0.0.0:8080
INFO     2017-08-06 20:26:06,457 admin_server.py:116] Starting admin server at: http://0.0.0.0:8000
```

Visit in your web browser to view the app

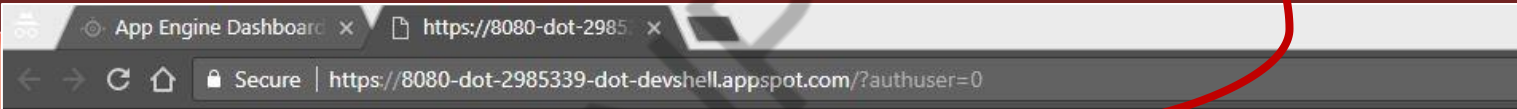
The image shows a terminal window and a web browser. The terminal window displays the following output:

```
sg_researchwork@gcp-pythonapp:~/src/gcp-pythonapp/python_gae_quickstart-2017-08-07-01-48/appengine/standard/hello_world$ dev_appserver.py $PWD
INFO 2017-08-06 20:26:05,853 devappserver2.py:116] Skipping SDK update check.
WARNING 2017-08-06 20:26:06,452 simple_search_stub.py:1169] Could not read search indexes from /tmp/appengine.None.sg_researchwork/search_indexes
INFO 2017-08-06 20:26:06,454 api_server.py:313] Starting API server at: http://0.0.0.0:54678
WARNING 2017-08-06 20:26:06,454 dispatcher.py:287] Your python27 micro version is below 2.7.12, our current production version.
INFO 2017-08-06 20:26:06,457 dispatcher.py:226] Starting module "default" running at: http://0.0.0.0:8080
INFO 2017-08-06 20:26:06,457 admin_server.py:116] Starting admin server at: http://0.0.0.0:8000
```

The web browser shows the URL `https://8080-dot-2985339-dot-devshell.appspot.com/?authuser=0` and the message `Hello, World!`. A red circle highlights the 'Web preview' button in the terminal window, and a red arrow points from it to the browser address bar.

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

```
sg_researchwork@gcp-pythonapp:~/src/gcp-pythonapp/python_gae_quickstart-2017-08-07-01-48/appengine/standard/hello_world$ dev_appserver.py $PWD
INFO 2017-08-06 20:26:05,853 devappserver2.py:116] Skipping SDK update check.
WARNING 2017-08-06 20:26:06,452 simple_search_stub.py:1169] Could not read search indexes from /tmp/appengine.None.sg_researchwork/search_indexes
INFO 2017-08-06 20:26:06,454 api_server.py:313] Starting API server at: http://0.0.0.0:54678
WARNING 2017-08-06 20:26:06,454 dispatcher.py:287] Your python27 micro version is below 2.7.12, our current production version.
INFO 2017-08-06 20:26:06,457 dispatcher.py:226] Starting module "default" running at: http://0.0.0.0:8080
INFO 2017-08-06 20:26:06,457 admin_server.py:116] Starting admin server at: http://0.0.0.0:8000
INFO 2017-08-06 20:27:28,674 module.py:832] default: "GET /?authuser=0 HTTP/1.0" 200 13
^CINFO 2017-08-06 20:28:14,914 shutdown.py:43] Shutting down.
INFO 2017-08-06 20:28:14,914 api_server.py:945] Applying all pending transactions and saving the datastore
INFO 2017-08-06 20:28:14,915 api_server.py:948] Saving search indexes
sg_researchwork@gcp-pythonapp:~/src/gcp-pythonapp/python_gae_quickstart-2017-08-07-01-48/appengine/standard/hello_world$
```

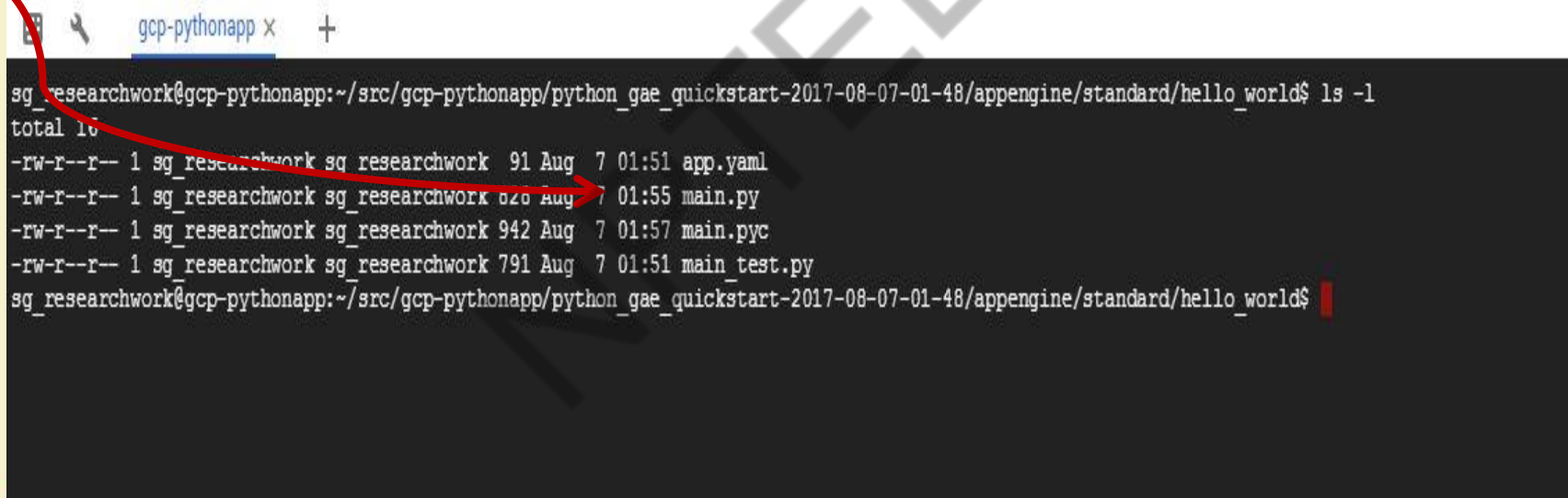


**Error: Could not connect to Cloud Shell on port 8080.**

Ensure your server is listening on port 8080 and try again.

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**

A terminal window titled 'gcp-pythonapp x' showing the output of the command 'ls -l'. The output lists four files: 'app.yaml', 'main.py', 'main.pyc', and 'main\_test.py'. A red arrow points from the text 'Edit main.py' to the 'main.py' entry in the terminal output.

```
sg_researchwork@gcp-pythonapp:~/src/gcp-pythonapp/python_gae_quickstart-2017-08-07-01-48/appengine/standard/hello_world$ ls -l
total 16
-rw-r--r-- 1 sg_researchwork sg_researchwork 91 Aug  7 01:51 app.yaml
-rw-r--r-- 1 sg_researchwork sg_researchwork 620 Aug  7 01:55 main.py
-rw-r--r-- 1 sg_researchwork sg_researchwork 942 Aug  7 01:57 main.pyc
-rw-r--r-- 1 sg_researchwork sg_researchwork 791 Aug  7 01:51 main_test.py
sg_researchwork@gcp-pythonapp:~/src/gcp-pythonapp/python_gae_quickstart-2017-08-07-01-48/appengine/standard/hello_world$
```

## 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)
```

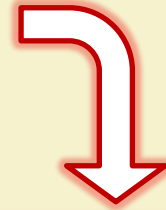
```
~
~
~
~
```

```
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)
```

```
~
~
```

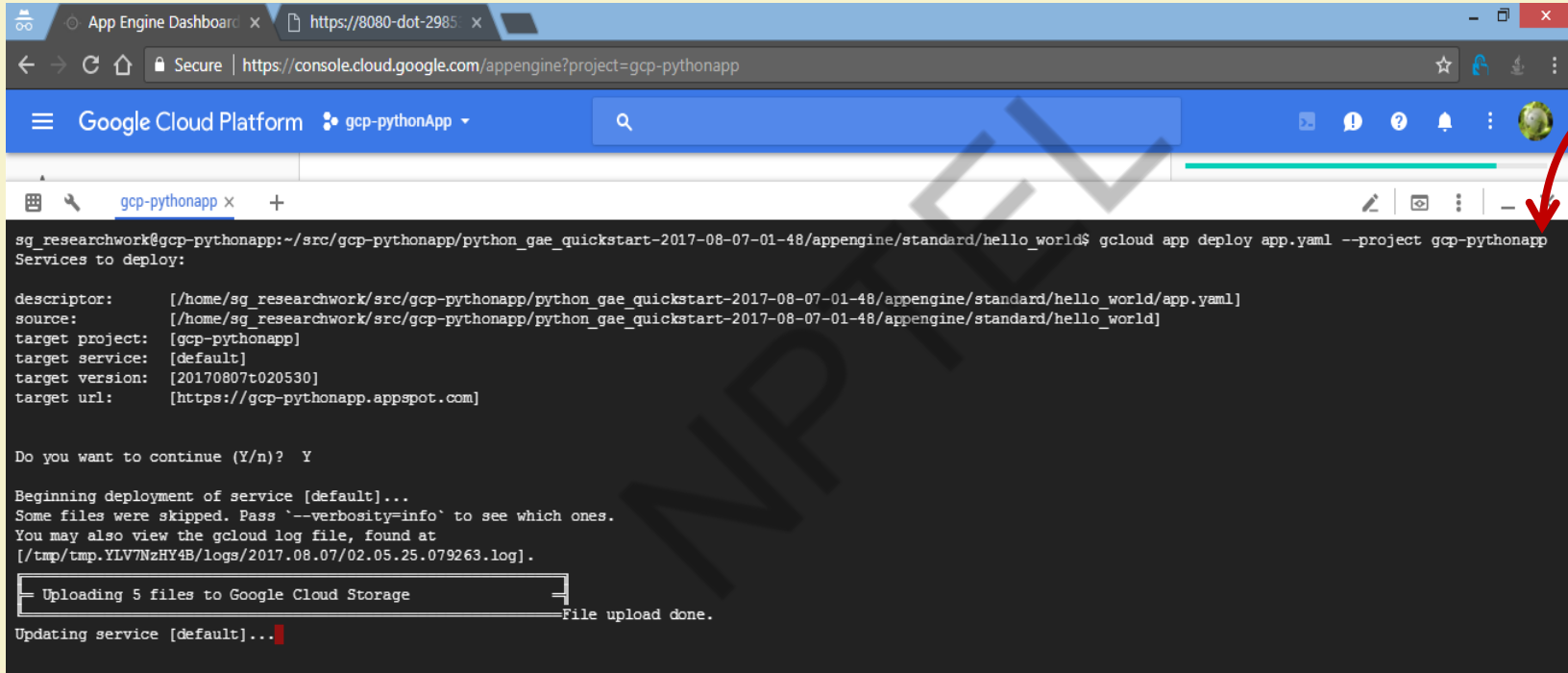




## Reload the web-page



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



```
sg_researchwork@gcp-pythonapp:~/src/gcp-pythonapp/python_gae_quickstart-2017-08-07-01-48/appengine/standard/hello_world$ gcloud app deploy app.yaml --project gcp-pythonapp
Services to deploy:

descriptor:      [/home/sg_researchwork/src/gcp-pythonapp/python_gae_quickstart-2017-08-07-01-48/appengine/standard/hello_world/app.yaml]
source:          [/home/sg_researchwork/src/gcp-pythonapp/python_gae_quickstart-2017-08-07-01-48/appengine/standard/hello_world]
target project:  [gcp-pythonapp]
target service: [default]
target version:  [20170807t020530]
target url:      [https://gcp-pythonapp.appspot.com]

Do you want to continue (Y/n)? Y

Beginning deployment of service [default]...
Some files were skipped. Pass `--verbosity=info` to see which ones.
You may also view the gcloud log file, found at
[/tmp/tmp.YLV7NzHY4B/logs/2017.08.07/02.05.25.079263.log].

[ ] Uploading 5 files to Google Cloud Storage
[ ] File upload done.
Updating service [default]...
```



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

```
sg_researchwork@gcp-pythonapp:~/src/gcp-pythonapp/python_gae_quickstart-2017-08-07-01-48/appengine/standard/hello_world$ gcloud app deploy app.yaml --project gcp-pythonapp
Services to deploy:

descriptor:    [/home/sg_researchwork/src/gcp-pythonapp/python_gae_quickstart-2017-08-07-01-48/appengine/standard/hello_world/app.yaml]
source:        [/home/sg_researchwork/src/gcp-pythonapp/python_gae_quickstart-2017-08-07-01-48/appengine/standard/hello_world]
target project: [gcp-pythonapp]
target service: [default]
target version: [20170807t020530]
target url:     [https://gcp-pythonapp.appspot.com]

Do you want to continue (Y/n)? Y

Beginning deployment of service [default]...
Some files were skipped. Pass `--verbosity=info` to see which ones.
You may also view the gcloud log file, found at
[/tmp/tmp.XLV7NzHY4B/logs/2017.08.07/02.05.25.079263.log].

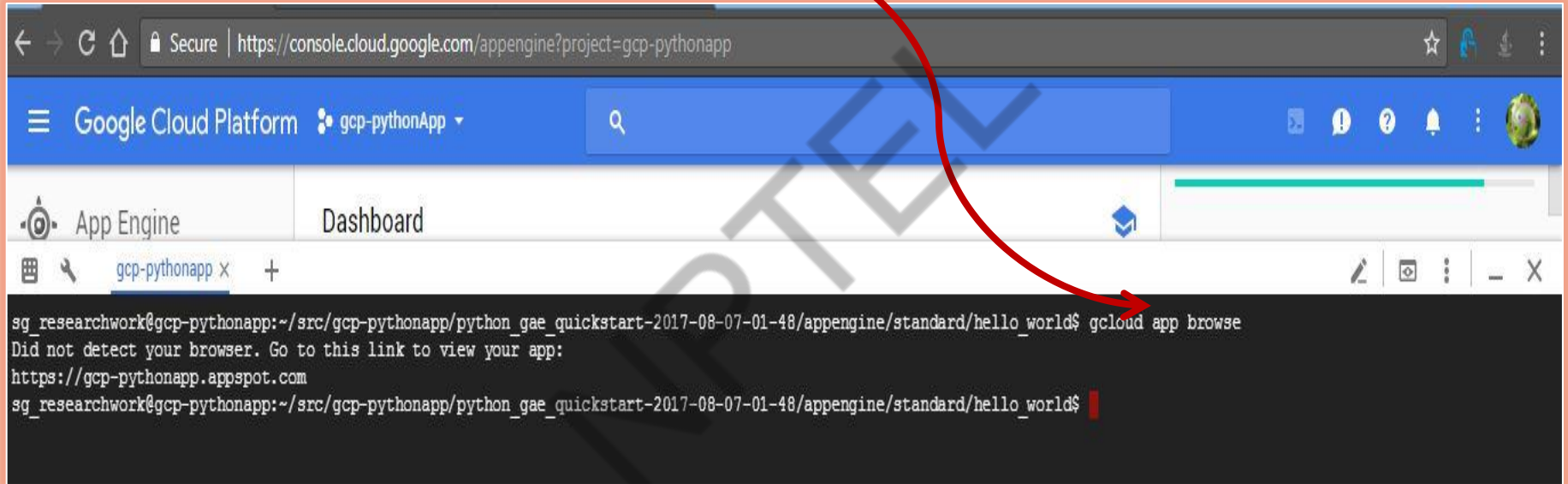
[Progress bar] Uploading 5 files to Google Cloud Storage [Progress bar] File upload done.

Updating service [default]...done.
Waiting for operation [apps/gcp-pythonapp/operations/891c8591-ecc1-4ac8-b5a8-a3358c03e16a] to complete...done.
Updating service [default]...done.
Deployed service [default] to [https://gcp-pythonapp.appspot.com]

You can stream logs from the command line by running:
$ gcloud app logs tail -s default

To view your application in the web browser run:
$ gcloud app browse
sg_researchwork@gcp-pythonapp:~/src/gcp-pythonapp/python_gae_quickstart-2017-08-07-01-48/appengine/standard/hello_world$
```

View your application : *gcloud app browse*

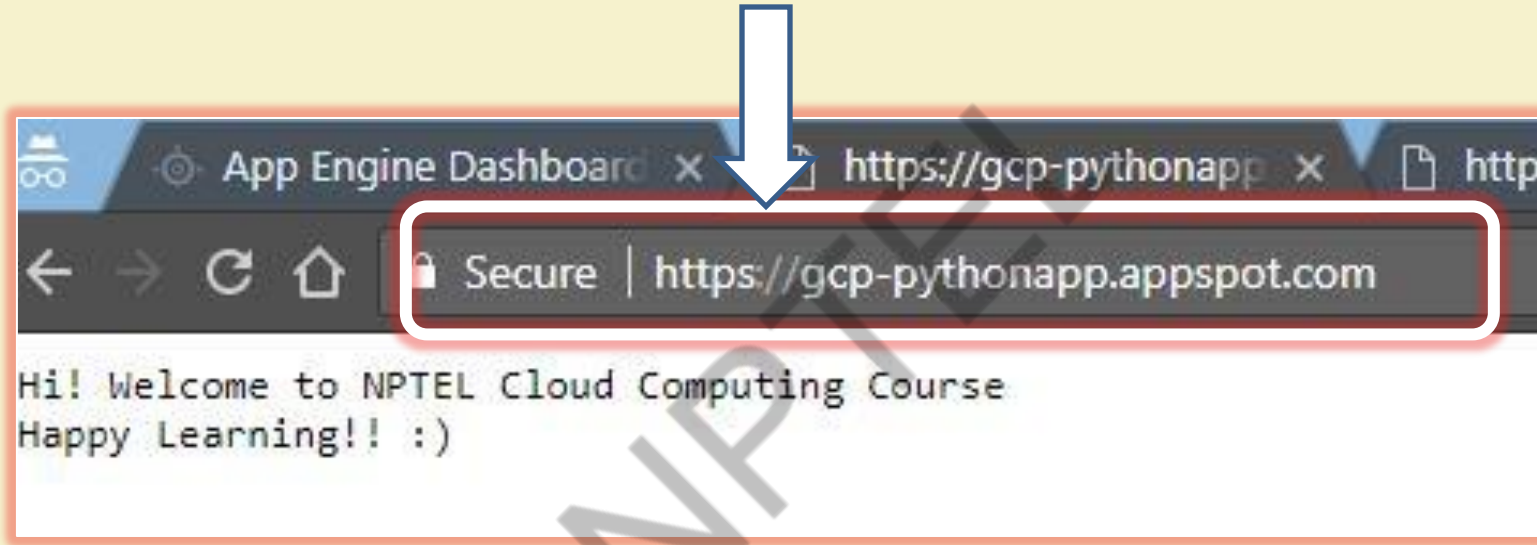


The screenshot shows a terminal window within the Google Cloud Platform console. The terminal prompt is `sg_researchwork@gcp-pythonapp:~/src/gcp-pythonapp/python_gae_quickstart-2017-08-07-01-48/appengine/standard/hello_world$`. The command `gcloud app browse` has been executed, resulting in the following output:

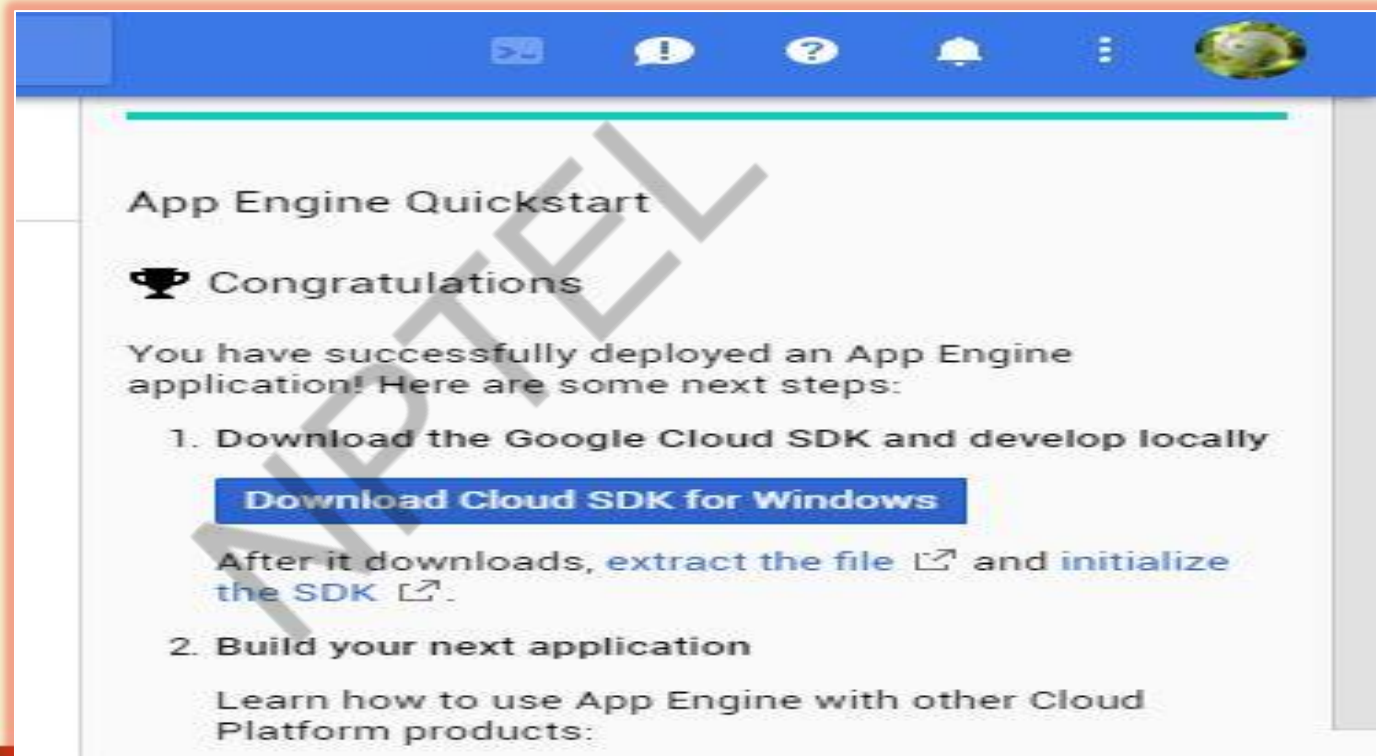
```
Did not detect your browser. Go to this link to view your app:  
https://gcp-pythonapp.appspot.com  
sg_researchwork@gcp-pythonapp:~/src/gcp-pythonapp/python_gae_quickstart-2017-08-07-01-48/appengine/standard/hello_world$
```

A red arrow points from the text above to the terminal output.

View your application : *gcloud app browse*



You have successfully deployed an web-app!



The screenshot shows a web browser window with a blue header bar containing navigation icons. The main content area is titled "App Engine Quickstart" and features a trophy icon followed by the heading "Congratulations". Below this, a message states: "You have successfully deployed an App Engine application! Here are some next steps:". A numbered list follows, with the first item being "1. Download the Google Cloud SDK and develop locally". Underneath this list item is a prominent blue button with the text "Download Cloud SDK for Windows". Below the button, there is a paragraph of text: "After it downloads, extract the file [external link icon] and initialize the SDK [external link icon]". The second item in the list is "2. Build your next application", followed by a sub-heading: "Learn how to use App Engine with other Cloud Platform products:".

## App Engine Quickstart

### 🏆 Congratulations

You have successfully deployed an App Engine application! Here are some next steps:

1. **Download the Google Cloud SDK and develop locally**  
[Download Cloud SDK for Windows](#)  
After it downloads, [extract the file](#) and [initialize the SDK](#).
2. **Build your next application**  
Learn how to use App Engine with other Cloud Platform products:

# 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>

# 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>

# Thank You!!!

