

[Python](https://cloud.google.com/python/) (<https://cloud.google.com/python/>) [Guides](#)

Getting started with Python on Compute Engine

This tutorial shows how to get started with Compute Engine. Follow this tutorial by deploying a Hello World Python web app to Compute Engine. For help getting started with App Engine, see the [App Engine standard environment](https://cloud.google.com/python/getting-started/tutorial-app) (<https://cloud.google.com/python/getting-started/tutorial-app>).

Objectives

- Use Cloud Shell to download and deploy a Hello World sample app.
- Deploy a Hello World sample app to a single Compute Engine instance.

Costs

This tutorial uses the following billable components of Google Cloud:

- [Compute Engine](https://cloud.google.com/compute/all-pricing) (<https://cloud.google.com/compute/all-pricing>)

To generate a cost estimate based on your projected usage, use the [pricing calculator](https://cloud.google.com/products/calculator) (<https://cloud.google.com/products/calculator>). New Google Cloud users might be eligible for a [free trial](https://cloud.google.com/free-trial) (<https://cloud.google.com/free-trial>).

Before you begin

1. [Sign in](https://accounts.google.com/Login) (https://accounts.google.com/Login) to your Google Account.

If you don't already have one, [sign up for a new account](https://accounts.google.com/SignUp)

(https://accounts.google.com/SignUp).

2. In the Cloud Console, on the project selector page, select or create a Google Cloud project.

Note: If you don't plan to keep the resources that you create in this procedure, create a project instead of selecting an existing project. After you finish these steps, you can delete the project, removing all resources associated with the project.

GO TO THE PROJECT SELECTOR PAGE (HTTPS://CONSOLE.CLOUD.GOOGLE.COM/PROJECTSELECT)

3. Make sure that billing is enabled for your Google Cloud project. [Learn how to confirm billing is enabled for your project](https://cloud.google.com/billing/docs/how-to/modify-project) (https://cloud.google.com/billing/docs/how-to/modify-project).

4. Enable the Compute Engine API.

ENABLE THE API (HTTPS://CONSOLE.CLOUD.GOOGLE.COM/FLOWS/ENABLEAPI?APIID=COMPUTE)

5. In the Google Cloud Console, open the app in [Cloud Shell](https://cloud.google.com/shell) (https://cloud.google.com/shell).

GO TO CLOUD SHELL (HTTPS://CLOUD.GOOGLE.COM/CONSOLE/CLOUDSHELL/OPEN?GIT_BRANCH)

Cloud Shell provides command-line access to your cloud resources directly from the browser. Open Cloud Shell in your browser and click **Proceed** to download the sample code and change into the app directory.

6. In Cloud Shell, configure the `gcloud` tool to use your new Google Cloud project:

```
# Configure gcloud for your project
gcloud config set project YOUR_PROJECT_ID
```



Running the app in Cloud Shell

1. In Cloud Shell, install your app dependencies using `pip`:

```
pip3 install -r requirements.txt --user
```




2. Install the [Gunicorn HTTP server](https://gunicorn.org/) (https://gunicorn.org/):

```
pip3 install gunicorn --user
```

3. Run the Gunicorn HTTP server:


```
~/local/bin/gunicorn -b :8080 main:app
```

4. In Cloud Shell, click **Web preview** , and select **Preview on port 8080**. This opens a new window with your running app.

5. To stop the local web server, press `Control+C`.

Deploying to a single instance

This section walks you through running a single instance of your app on Compute Engine.

 Single-instance deployment.

From Cloud Shell, you can deploy to a single Compute Engine instance virtual machine (VM) which runs your app.

Use a startup script to initialize an instance

You need a way to instruct your instance to download and run your code. An instance can have a startup script that runs whenever the instance is started or restarted.

```
gce/startup-script.sh
```

```
(https://github.com/GoogleCloudPlatform/getting-started-python/blob/master/gce/startup-script.sh)
```

```
COM/GOOGLECLOUDPLATFORM/GETTING-STARTED-PYTHON/BLOB/MASTER/GCE/STARTUP-SCRIPT.SH)
```

```
# Install Stackdriver logging agent
curl -sS0 https://dl.google.com/cloudagents/install-logging-agent.sh
sudo bash install-logging-agent.sh
```

```
# Install or update needed software
apt-get update
apt-get install -yq git supervisor python python-pip
pip install --upgrade pip virtualenv
```

```
# Account to own server process
```

```
useradd -m -d /home/pythonapp pythonapp

# Fetch source code
export HOME=/root
git clone https://github.com/GoogleCloudPlatform/getting-started-python.git /opt/app

# Python environment setup
virtualenv -p python3 /opt/app/gce/env
source /opt/app/gce/env/bin/activate
/opt/app/gce/env/bin/pip install -r /opt/app/gce/requirements.txt

# Set ownership to newly created account
chown -R pythonapp:pythonapp /opt/app

# Put supervisor configuration in proper place
cp /opt/app/gce/python-app.conf /etc/supervisor/conf.d/python-app.conf

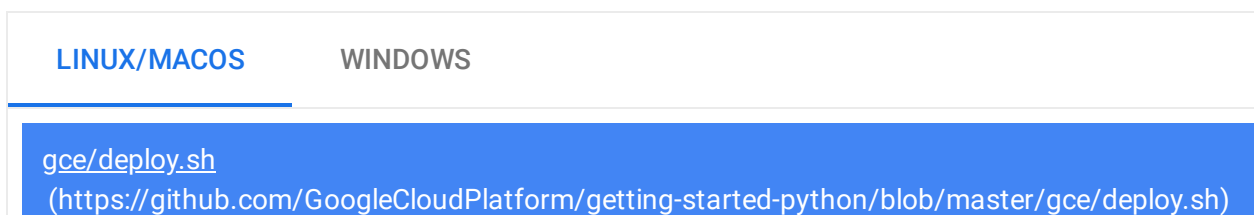
# Start service via supervisorctl
supervisorctl reread
supervisorctl update
```

The startup script performs these tasks:

- Installs Python 3 and Pip.
- Installs the Stackdriver Logging agent. The agent automatically collects logs from syslog.
- Installs Supervisor (<http://supervisord.org/>) to run the app as a daemon.
- Clones the app's source code from the Cloud Source Repositories and installs dependencies.
- Configures Supervisor to run the app. Supervisor makes sure the app is restarted if it exits unexpectedly or is terminated by an admin or other process. It also sends the app's `stdout` and `stderr` to syslog to be collected by the Logging agent.

Create and configure a Compute Engine instance

1. Create a Compute Engine instance:



```
GHUB.COM/GOOGLECLOUDPLATFORM/GETTING-STARTED-PYTHON/BLOB/MASTER/GCE/DEPLOY.SH)
```

```
MY_INSTANCE_NAME="my-app-instance"
ZONE=us-central1-a

gcloud compute instances create $MY_INSTANCE_NAME \
  --image-family=debian-9 \
  --image-project=debian-cloud \
  --machine-type=g1-small \
  --scopes userinfo-email,cloud-platform \
  --metadata-from-file startup-script=startup-script.sh \
  --zone $ZONE \
  --tags http-server
```

Replace the zone with a development zone, for example `us-central1-a`. For more information on regions and zones, see [Geography and regions](https://cloud.google.com/docs/geography-and-regions) (<https://cloud.google.com/docs/geography-and-regions>).

This creates a new instance, allows it to access Google Cloud services, and runs your startup script. The instance name is `my-app-instance`.

2. Check the progress of the instance creation:

```
gcloud compute instances get-serial-port-output my-app-instance --zone YOUR_ZONE
```

Replace `YOUR_ZONE` with the zone you deployed your instance to.

When the startup script is complete, you see the following message:

```
startup-script: INFO Finished running startup scripts.
```

3. Create a firewall rule to allow traffic to your instance:

```
gcloud compute firewall-rules create default-allow-http-8080 \
  --allow tcp:8080 \
  --source-ranges 0.0.0.0/0 \
  --target-tags http-server \
  --description "Allow port 8080 access to http-server"
```

4. Get the external IP address of your instance:

```
gcloud compute instances list
```

5. To see your app running, enter this URL in your browser:

```
http://YOUR_INSTANCE_IP:8080
```



Replace `YOUR_INSTANCE_IP` with the external IP address of your instance.

Manage and monitor an instance

You can use the Cloud Console to monitor and manage your instance.

1. In the Cloud Console, go to the **VM instances** page.

[GO TO THE VM INSTANCES PAGE](https://console.cloud.google.com/compute/instances) ([HTTPS://CONSOLE.CLOUD.GOOGLE.COM/COMPUTE/INSTANCES](https://console.cloud.google.com/compute/instances))

2. In the list of virtual machine instances, click **SSH** in the row of the instance that you want to connect to.

3. To view all of the logs generated by your Compute Engine resources, go to the **Logs viewer** page.

[GO TO LOGS VIEWER](https://console.cloud.google.com/logs?service=compute.googleapis.com) ([HTTPS://CONSOLE.CLOUD.GOOGLE.COM/LOGS?SERVICE=COMPUTE.GOOGLE](https://console.cloud.google.com/logs?service=compute.googleapis.com))

[Stackdriver Logging](https://cloud.google.com/logging) (<https://cloud.google.com/logging>) is automatically configured to gather logs from various common services, including `syslog`.

Cleaning up

To avoid incurring charges to your Google Cloud Platform account for the resources used in this tutorial:

Delete the project

Caution: Deleting a project has the following effects:


- **Everything in the project is deleted.** If you used an existing project for this tutorial, when you delete it, you also delete any other work you've done in the project.
- **Custom project IDs are lost.** When you created this project, you might have created a custom project ID that you want to use in the future. To preserve the URLs that use the project ID, such

as an **appspot.com** URL, delete selected resources inside the project instead of deleting the whole project.

If you plan to explore multiple tutorials and quickstarts, reusing projects can help you avoid exceeding project quota limits.

1. In the Cloud Console, go to the **Manage resources** page.

[GO TO THE MANAGE RESOURCES PAGE](https://console.cloud.google.com/IAM-admin/PROJECTS) (HTTPS://CONSOLE.CLOUD.GOOGLE.COM/IAM-ADMIN/PROJECTS)

2. In the project list, select the project you want to delete and click **Delete** .
3. In the dialog, type the project ID, and then click **Shut down** to delete the project.

Delete the individual resources

```
gcloud compute instances delete my-app-instance --zone=YOUR_ZONE --delete-disks=all
gcloud compute firewall-rules delete default-allow-http-8080
```

What's next

- [Create managed instance groups](https://cloud.google.com/compute/docs/instance-groups/creating-groups-of-managed-instances)
(<https://cloud.google.com/compute/docs/instance-groups/creating-groups-of-managed-instances>).
- [Create a load balancer](https://cloud.google.com/load-balancing/docs/https/https-load-balancer-example)
(<https://cloud.google.com/load-balancing/docs/https/https-load-balancer-example>).
- [Handle sessions with Firestore](https://cloud.google.com/python/getting-started/session-handling-with-firestore)
(<https://cloud.google.com/python/getting-started/session-handling-with-firestore>).
- [Add background processing with Pub/Sub and Cloud Run](https://cloud.google.com/python/getting-started/background-processing)
(<https://cloud.google.com/python/getting-started/background-processing>).
- [Deploy an app to Google Kubernetes Engine](https://cloud.google.com/kubernetes-engine/docs/quickstarts/deploying-a-language-specific-app)
(<https://cloud.google.com/kubernetes-engine/docs/quickstarts/deploying-a-language-specific-app>).
- [Authenticate users with Identity-Aware Proxy](https://cloud.google.com/python/getting-started/authenticate-users)
(<https://cloud.google.com/python/getting-started/authenticate-users>).

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