

Google Cloud

Environment Setup

We must download and Google SDK from the official website - Guide can be found at <https://cloud.google.com/sdk/docs/install>

In my case I am running Fedora 41 in my laptop, we must add the following repository running this command:

```
sudo tee -a /etc/yum.repos.d/google-cloud-sdk.repo << EOM
[google-cloud-cli]
name=Google Cloud CLI
baseurl=https://packages.cloud.google.com/yum/repos/cloud-sdk-el9-x86_64
enabled=1
gpgcheck=1
repo_gpgcheck=0
gpgkey=https://packages.cloud.google.com/yum/doc/rpm-package-key.gpg
EOM
```

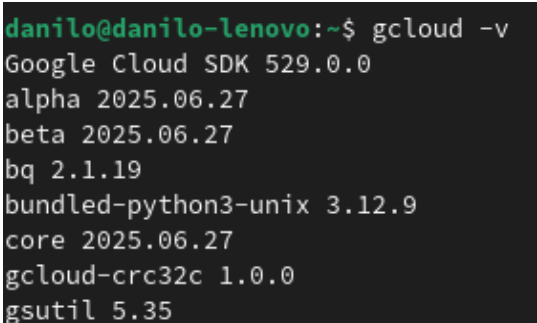
After the command is executed, we need install **libxcrypt-compat.x86_64**

```
sudo dnf install libxcrypt-compat.x86_64
```

And finally we are able to install Google SDK and set-up

```
sudo dnf install google-cloud-cli
```

After installation is completed, we are able to check if everything is up typing `gcloud -v` in our console



```
danilo@danilo-lenovo:~$ gcloud -v
Google Cloud SDK 529.0.0
alpha 2025.06.27
beta 2025.06.27
bq 2.1.19
bundled-python3-unix 3.12.9
core 2025.06.27
gcloud-crc32c 1.0.0
gsutil 5.35
```

Now, we must run to configure our account and create a new project

```
gcloud init
```

Since I already had my Google Cloud setted-up, I will just re-initialize and create a new configuration

```
danilo@danilo-lenovo:~$ gcloud init
Welcome! This command will take you through the configuration of gcloud.

Settings from your current configuration [cloudca] are:
core:
  account: danilo.lucas94@gmail.com
  disable_usage_reporting: 'True'

Pick configuration to use:
[1] Re-initialize this configuration [cloudca] with new settings
[2] Create a new configuration
[3] Switch to and re-initialize existing configuration: [default]
Please enter your numeric choice: 3

Your current configuration has been set to: [default]

You can skip diagnostics next time by using the following flag:
  gcloud init --skip-diagnostics

Network diagnostic detects and fixes local network connection issues.
Checking network connection...done.
Reachability Check passed.
Network diagnostic passed (1/1 checks passed).

Choose the account you want to use for this configuration.
To use a federated user account, exit this command and sign in to the gcl

Select an account:
[1] danilo.lucas94@gmail.com
[2] tyraniitar@gmail.com
[3] Sign in with a new Google Account
[4] Skip this step
Please enter your numeric choice: 1
```

```

You are signed in as: [danilo.lucas94@gmail.com].

Pick cloud project to use:
[1] dbs-real-state
[2] gen-lang-client-0577238429
[3] lostfound-454820
[4] Enter a project ID
[5] Create a new project
Please enter numeric choice or text value (must exactly match list item): 4

Enter project ID you would like to use: dbcloudca
Project ID does not exist or is not active.
Do you want to continue (y/N)? y

Your current project has been set to: [dbcloudca].

Not setting default zone/region (this feature makes it easier to use
[gcloud compute] by setting an appropriate default value for the
--zone and --region flag).
See https://cloud.google.com/compute/docs/gcloud-compute section on how to set
default compute region and zone manually. If you would like [gcloud init] to be
able to do this for you the next time you run it, make sure the
Compute Engine API is enabled for your project on the
https://console.developers.google.com/apis page.

The Google Cloud CLI is configured and ready to use!

```

Let's create a new project and enable Compute and IAM APIs

`gcloud projects create dbcloudca --set-as-default`

```

danilo@danilo-lenovo:~$ gcloud projects create dbcloudca --set-as-default
Create in progress for [https://cloudresourcemanager.googleapis.com/v1/projects/dbcloudca].
Waiting for [operations/create_project.global.5345676730696686842] to finish...done.
Enabling service [cloudapis.googleapis.com] on project [dbcloudca]...
Operation "operations/acat.p2-505858927639-7d2075c8-2e58-4e88-bb06-e552d774db1f" finished successfully.
Updated property [core/project] to [dbcloudca].

```

Remember to select a billing account, you will not be able to proceed if you do not select one

```
danilo@danilo-lenovo:~$ gcloud services enable compute.googleapis.com iam.googleapis.com
ERROR: (gcloud.services.enable) FAILED_PRECONDITION: Billing account for project '505858927639' is not found. Billing must be enabled for activation of service(s) 'compute.googleapis.com' to proceed.
Help Token: AeNz4PgIKLi-QaU4LcxT5cZlhbu_mQQdSCi2-OQ-vAKGQV0iH00Jmi5iZ28oiWsuGIHmQAFgcrXmXSve-NX58mBXGntUvzLzhM4wcWGcuvrpsU-A
- '@type': type.googleapis.com/google.rpc.PreconditionFailure
  violations:
  - subject: ?error_code=390001&project=505858927639&services=compute.googleapis.com
    type: googleapis.com/billing-enabled
- '@type': type.googleapis.com/google.rpc.ErrorInfo
  domain: serviceusage.googleapis.com/billing-enabled
  metadata:
    project: '505858927639'
    services: compute.googleapis.com
  reason: UREQ_PROJECT_BILLING_NOT_FOUND
```

gcloud services enable compute.googleapis.com iam.googleapis.com

```
danilo@danilo-lenovo:~$ gcloud services enable compute.googleapis.com iam.googleapis.com
Operation "operations/acf.p2-505858927639-726b2126-df99-4e81-9bc2-26f3eb82ba9b" finished successfully.
```

Creating a Web server using script

Now we are able to run our script to create VM that can be found at https://github.com/danilolucas94/DBS_CloudCA using the command SH, this script automatically create a new instance on GCloud, but before we must set a few variables to make it happen

```
danilo@danilo-lenovo:~/Google Drive/College/Cloud Computing$ sh vm-script.sh

*** Setting Variables for our VM ***
Variables set

*** Setting Project ID on GCloud ***
Updated property [core/project].

*** Reserving a static external IP ***
Created [https://www.googleapis.com/compute/v1/projects/dbsccloudca/regions/us-central1/addresses/ca-cloud-vm].

*** Creating VM ***
Created [https://www.googleapis.com/compute/v1/projects/dbsccloudca/zones/us-central1-c/instances/webserver-vm].
WARNING: Some requests generated warnings:
  - Disk size: '250 GB' is larger than image size: '10 GB'. You might need to resize the root repartition manually if the o
disk#resize_pd for details.

NAME          ZONE          MACHINE_TYPE  PREEMPTIBLE  INTERNAL_IP  EXTERNAL_IP  STATUS
webserver-vm  us-central1-c  e2-standard-2          10.128.0.6   104.198.38.210  RUNNING

Waiting for VM initialization...

*** Creating firewall rule to allow HTTP and SSH ***
Creating firewall...Created [https://www.googleapis.com/compute/v1/projects/dbsccloudca/global/firewalls/allow-http-ssh].
Creating firewall...done.
NAME          NETWORK  DIRECTION  PRIORITY  ALLOW          DENY  DISABLED
allow-http-ssh  default  INGRESS    1000      tcp:80,tcp:22  False

*** Connecting using SSH and install Apache and create Hello World file ***
Warning: Permanently added 'compute.3361074575208080676' (ED25519) to the list of known hosts.
Get:1 http://us-central1.gce.archive.ubuntu.com/ubuntu jammy InRelease [270 kB]
Get:2 http://us-central1.gce.archive.ubuntu.com/ubuntu jammy-updates InRelease [128 kB]
Get:3 http://us-central1.gce.archive.ubuntu.com/ubuntu jammy-backports InRelease [127 kB]
Get:4 http://security.ubuntu.com/ubuntu jammy-security InRelease [129 kB]
Get:5 http://us-central1.gce.archive.ubuntu.com/ubuntu jammy/main amd64 Packages [1395 kB]
Get:6 http://us-central1.gce.archive.ubuntu.com/ubuntu jammy/main Translation-en [510 kB]
```

In this screenshot your Firewall rules, internal IP and External IP is being shown

```
Enabling core: serve-cgi-bin.
Enabling site 000-default.
Created symlink /etc/systemd/system/multi-user.target.wants/apache2.service → /lib/systemd/system/apache2.service.
Created symlink /etc/systemd/system/multi-user.target.wants/apache-htcacheclean.service → /lib/systemd/system/apache-htcacheclean.service.
Processing triggers for libc-bin (2.35-0ubuntu3.10) ...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
Hello World

*** Webserver updated and running ***
```

Our Webserver is updated and running, using a ping command we can see that we are getting a response from our webserver

```
danilo@danilo-lenovo:~/Google Drive/College/Cloud Computing$ ping 104.198.38.210
PING 104.198.38.210 (104.198.38.210) 56(84) bytes of data.
64 bytes from 104.198.38.210: icmp_seq=1 ttl=56 time=142 ms
64 bytes from 104.198.38.210: icmp_seq=2 ttl=56 time=143 ms
64 bytes from 104.198.38.210: icmp_seq=3 ttl=56 time=138 ms
64 bytes from 104.198.38.210: icmp_seq=4 ttl=56 time=137 ms
^C
--- 104.198.38.210 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3001ms
rtt min/avg/max/mdev = 137.035/140.067/142.604/2.412 ms
```

Connect using SSH command or gcloud compute ssh

```
danilo@danilo-lenovo:~/Google Drive/College/Cloud Computing$ ssh 104.198.38.210
The authenticity of host '104.198.38.210 (104.198.38.210)' can't be established.
ED25519 key fingerprint is SHA256:RMQc8hGoN680AlU/mKQIc2ZmyiC1li6tyyQ63xSqQG8.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '104.198.38.210' (ED25519) to the list of known hosts.
Welcome to Ubuntu 22.04.5 LTS (GNU/Linux 6.8.0-1032-gcp x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/pro

This system has been minimized by removing packages and content that are
not required on a system that users do not log into.

To restore this content, you can run the 'unminimize' command.

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

New release '24.04.2 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

danilo@webserver-vm:~$
```

```
danilo@danilo-lenovo:~/Google Drive/College/Cloud Computing$ gcloud compute ssh webserver-vm
No zone specified. Using zone [us-central1-c] for instance: [webserver-vm].
Welcome to Ubuntu 22.04.5 LTS (GNU/Linux 6.8.0-1032-gcp x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
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See https://ubuntu.com/esm or run: sudo pro status

New release '24.04.2 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

Last login: Sat Jul 12 13:04:40 2025 from 37.228.246.190
danilo@webserver-vm:~$
```

Using a browser we are able to see our site running and showing the message “Hello Word”

