

How to Increase HDD Capacity on a VM in GCP?

written by sysadmin | 30 April 2025

If you have a virtual machine at GCP, by default, the Linux system will only make one partition / only. If the partition is smaller, then you have to increase the hard disk server size

Problem

How to increase HDD capacity on a VM in GCP?

Solution

Currently, I have a VM Ubuntu Server 24.04 in GCP with an HDD capacity of 10 GB as in the image below:

```
root@vm-cloud:~# df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/root        8.7G  8.1G  588M  94% /
tmpfs            3.9G   0  3.9G   0% /dev/shm
tmpfs            1.6G 952K  1.6G   1% /run
tmpfs            5.0M   0  5.0M   0% /run/lock
efivarfs         56K  24K   27K  48% /sys/firmware/efi/efivars
/dev/sda16       881M   61M  759M   8% /boot
/dev/sda15       105M   6.1M   99M   6% /boot/efi
tmpfs            794M  12K  794M   1% /run/user/1001
root@vm-cloud:~#
```

The hard disk condition of my server

You can see from the image above that my partition / is very small, and here is the block device in my VM:

```

root@vm-cloud:~# lsblk
NAME        MAJ:MIN RM   SIZE RO TYPE MOUNTPOINTS
loop0         7:0    0  63.7M  1 loop /snap/core20/2496
loop1         7:1    0 409.1M  1 loop /snap/google-cloud-cli/315
loop2         7:2    0  44.4M  1 loop /snap/snapd/23771
sda           8:0    0   10G   0 disk
├─sda1         8:1    0    9G   0 part /
├─sda14        8:14   0    4M   0 part
├─sda15        8:15   0   106M  0 part /boot/efi
└─sda16       259:0    0   913M  0 part /boot
root@vm-cloud:~#

```




The block devices in my VM

I want to increase the HDD capacity to 20 GB without rebooting the server. These are the steps below (recommended as a root user to do the steps below):

1. Edit in the Disks section

You can use the command below to increase the VM's hard disk to 20 GB in the cloud shell or from your laptop [if you have already installed gcloud](#) (change the VM name, size, and zone from the command below):

```
gcloud compute disks resize vm-cloud --size 20 --zone=us-central1-c
```

You can also increase the hard disk in GCP by entering GCP, selecting **Compute Engine – Disks**, and then selecting VM.

Compute Engine / Disks

Overview

Virtual machines

- VM instances
- Instance templates
- Sole-tenant nodes
- Machine images
- TPUs
- Committed use discou...
- Reservations
- Migrate to Virtual Mach...

Storage

- Disks**
- Storage Pools
- Snapshots
- Marketplace

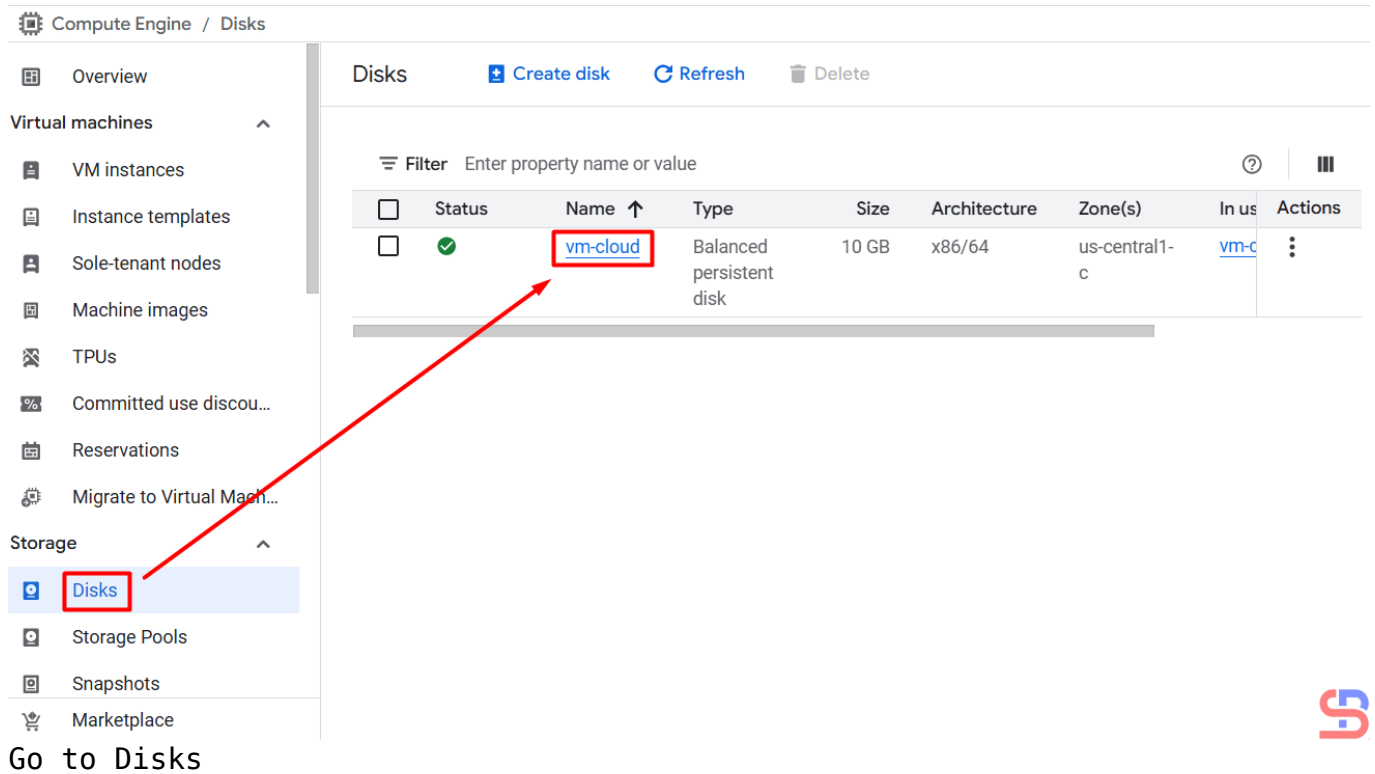
Go to Disks

Disks

Create disk Refresh Delete

Filter Enter property name or value

☐	Status	Name ↑	Type	Size	Architecture	Zone(s)	In use by	Actions
☐	✓	vm-cloud	Balanced persistent disk	10 GB	x86/64	us-central1-c	vm-c	⋮



After that, click **Edit** as below:

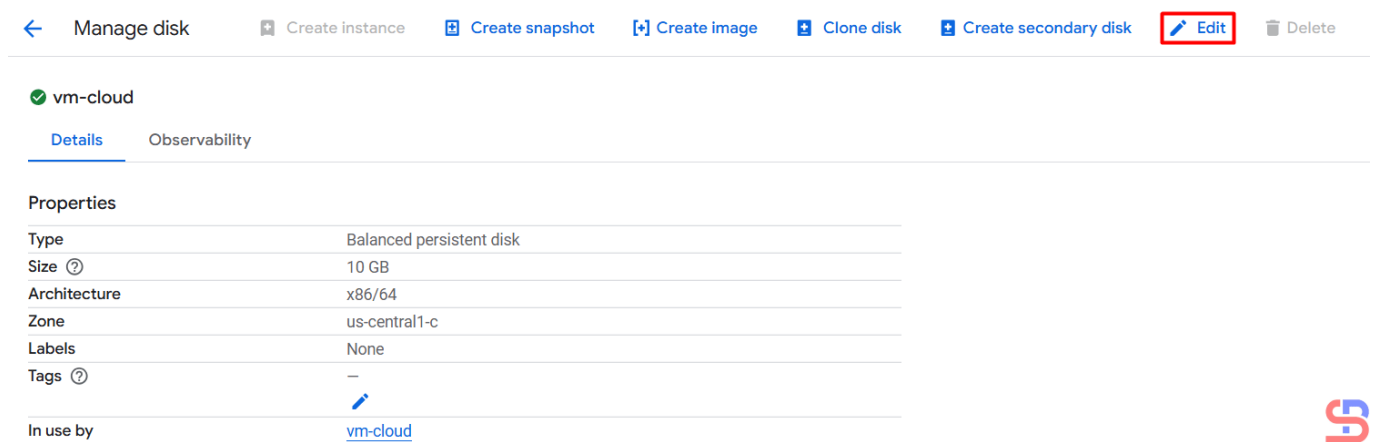
Manage disk Create instance Create snapshot Create image Clone disk Create secondary disk **Edit** Delete

✓ vm-cloud

Details Observability

Properties

Type	Balanced persistent disk
Size ?	10 GB
Architecture	x86/64
Zone	us-central1-c
Labels	None
Tags ?	—
In use by	vm-cloud



Click the Edit

2. Increase HDD capacity

After that, increase the HDD capacity in the section as shown in the image below:



Manage disk



Create instance



Create snapshot

✓ vm-cloud

Properties

Size * GB ?

Provision between 10 and 65,536 GB

Change the HDD to 20 GB

Change it to 20 GB, and after that, press the **Save** button so there will be a display like below:



Manage disk



Create instance



Create snapshot

✓ vm-cloud

Details

Observability

Properties

Type	Balanced persistent disk
Size ?	20 GB
Architecture	x86/64
Zone	us-central1-c
Labels	None
Tags ?	—

Server's HDD changed to 20 GB

WARNING

You cannot reduce the HDD capacity on a VM in GCP, for example, from 10 GB to

5 GB, but you can only increase the HDD capacity.

3. Check the block devices

Enter the VM, then we check the block devices using the command:

```
lsblk
```

```
root@vm-cloud:~# lsblk
NAME        MAJ:MIN RM   SIZE RO TYPE MOUNTPOINTS
loop0        7:0      0   63.7M 1 loop /snap/core20/2496
loop1        7:1      0 409.1M 1 loop /snap/google-cloud-cli/315
loop2        7:2      0   44.4M 1 loop /snap/snapd/23771
sda          8:0      0    20G 0 disk
├─sda1       8:1      0     9G 0 part /
├─sda14      8:14     0     4M 0 part
├─sda15      8:15     0   106M 0 part /boot/efi
└─sda16     259:0     0   913M 0 part /boot
```

The block device after increasing the hard disk

You can see in the picture above that the HDD capacity is 20 GB.

4. Check the partition tables

Then check the partition tables using the command:

```
parted -l
```

```
root@vm-cloud:~# parted -l
Warning: Not all of the space available to /dev/sda appears to be used, you can
fix the GPT to use all of the space (an extra 20971520 blocks) or continue with
the current setting?
Fix/Ignore? F
Model: Google PersistentDisk (scsi)
Disk /dev/sda: 21.5GB
Sector size (logical/physical): 512B/4096B
Partition Table: gpt
Disk Flags:

Number  Start   End     Size    File system  Name  Flags
14      1049kB  5243kB  4194kB                bios_grub
15      5243kB  116MB   111MB    fat32         boot, esp
16      116MB   1074MB  957MB    ext4         bls_boot
1       1075MB  10.7GB  9663MB   ext4
```

Check the partition table

If you have a warning like in the image above, you can choose Fix or Ignore, but I chose Fix. From the picture above, you can see that the HDD in this VM has number **1** in the **/dev/sda** partition using the **ext4** extension.

WARNING

You have to be careful with the Number and Filesystem in this section because each Linux has a different Number and Filesystem.

5. Resize the partition

Use the command below to resize the partition:

```
parted /dev/sda
```

```
root@vm-cloud:~# parted /dev/sda
GNU Parted 3.6
Using /dev/sda
Welcome to GNU Parted! Type 'help' to view a list of commands.
(parted) 
```

Resize the partition /

Then type the command:

```
resizepart
```

```
root@vm-cloud:~# parted /dev/sda
GNU Parted 3.6
Using /dev/sda
Welcome to GNU Parted! Type 'help' to view a list of commands.
(parted) resizepart
Partition number? 1
Warning: Partition /dev/sda1 is being used. Are you sure you want to continue?
Yes/No? Y
End? [10.7GB]? 100%
(parted) quit
Information: You may need to update /etc/fstab.

root@vm-cloud:~#
```

Process to resize the partition /

Enter number **1** (check your partition number in step 5), type

Y, and type **100%**. After that, type **quit** to exit the prompt.

6. Read the new partition table

Use the command below to read the new partition table:

```
partprobe /dev/sda
```

7. Extend the file system

Use the command below to see the types of filesystems used in your VM:

```
df -T
```

To extend the file system, use the command below if you are using ext4 (and I am using this filesystem):

```
sudo resize2fs /dev/sda1
```

If you use the xfs filesystem, use the command:

```
sudo xfs_growfs -d /
```

But if you use btrfs, then use the command:

```
sudo btrfs filesystem resize max /
```

8. Check HDD capacity

Use **the df -h** command to check the hard disk capacity, and it should match the additional HDD in the GCP (in my case, the HDD capacity is 20 GB):

```

root@vm-cloud:~# partprobe /dev/sda
root@vm-cloud:~#
root@vm-cloud:~# df -Th

```

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/root	ext4	8.7G	8.1G	588M	94%	/
tmpfs	tmpfs	3.9G	0	3.9G	0%	/dev/shm
tmpfs	tmpfs	1.6G	952K	1.6G	1%	/run
tmpfs	tmpfs	5.0M	0	5.0M	0%	/run/lock
efivarfs	efivarfs	56K	24K	27K	48%	/sys/firmware/efi/efivars
/dev/sda16	ext4	881M	61M	759M	8%	/boot
/dev/sda15	vfat	105M	6.1M	99M	6%	/boot/efi
tmpfs	tmpfs	794M	12K	794M	1%	/run/user/1001

```

root@vm-cloud:~#
root@vm-cloud:~# resize2fs /dev/sda1
resize2fs 1.47.0 (5-Feb-2023)
Filesystem at /dev/sda1 is mounted on /; on-line resizing required
old_desc_blocks = 2, new_desc_blocks = 3
The filesystem on /dev/sda1 is now 4980475 (4k) blocks long.

root@vm-cloud:~# df -h

```

Filesystem	Size	Used	Avail	Use%	Mounted on
/dev/root	19G	8.1G	11G	44%	/
tmpfs	3.9G	0	3.9G	0%	/dev/shm
tmpfs	1.6G	952K	1.6G	1%	/run
tmpfs	5.0M	0	5.0M	0%	/run/lock
efivarfs	56K	24K	27K	48%	/sys/firmware/efi/efivars
/dev/sda16	881M	61M	759M	8%	/boot
/dev/sda15	105M	6.1M	99M	6%	/boot/efi
tmpfs	794M	12K	794M	1%	/run/user/1001

```

root@vm-cloud:~#

```

Check the hard disk size

Note

You should back up the important data on the VM first before following the steps above. However, you can increase the HDD capacity in a VM without doing the steps above by rebooting the VM after changing the HDD capacity in the GCP console (step 2).

References

cloud.google.com
man7.org
medium.com
gist.github.com
youtube.com

How to Create a Virtual Machine Using CLI in GCP?

written by sysadmin | 30 April 2025

[The previous article](#) explained how to create a virtual machine in GCP using a GUI template. This article will explain how to create a virtual machine on GCP using the CLI.

Problem

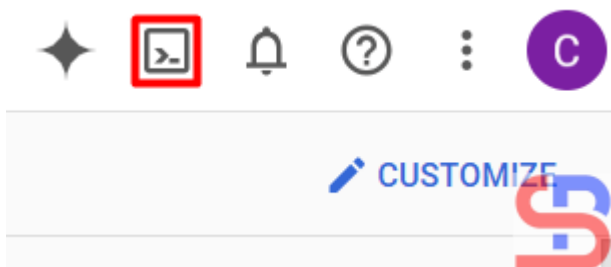
How to create a virtual machine using CLI in GCP?

Solution

These are the steps to create a virtual machine using CLI:

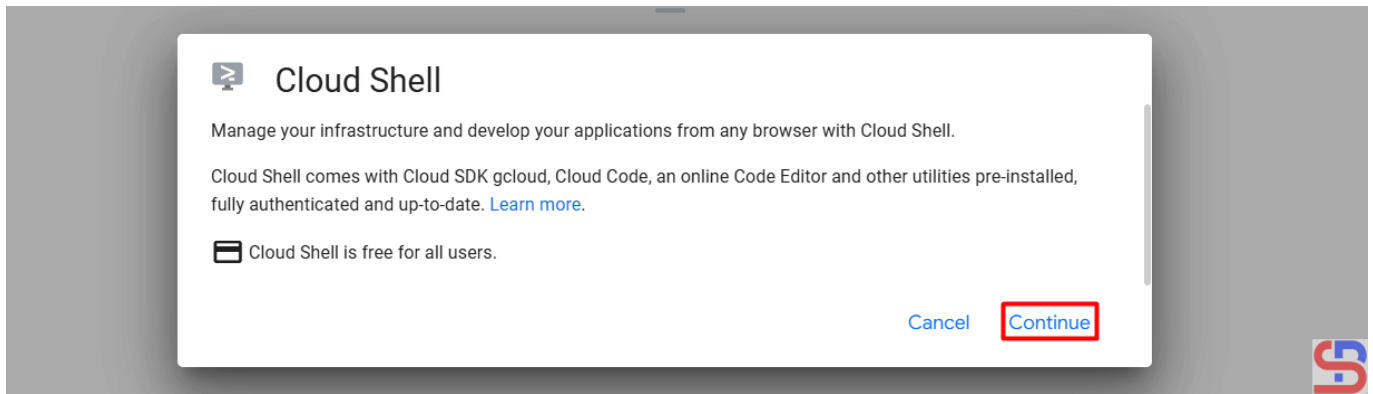
A. Access to the gcloud

If you have already [installed gcloud on your laptop](#), you can go [to the next step](#). But, if you want to use gcloud in your GCP, go to the GCP dashboard, then click the small box as shown in the image below to activate the cloud shell (or you push the **G** then **S** button):



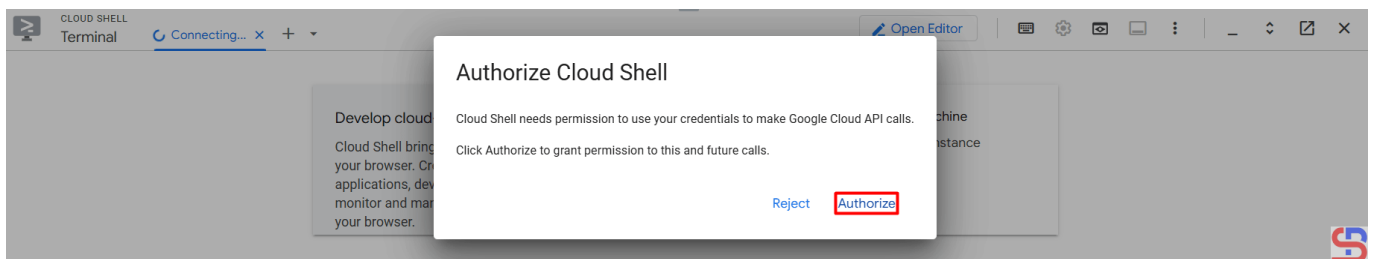
Click the Activate Cloud Shell button

There will be a display below at the bottom:



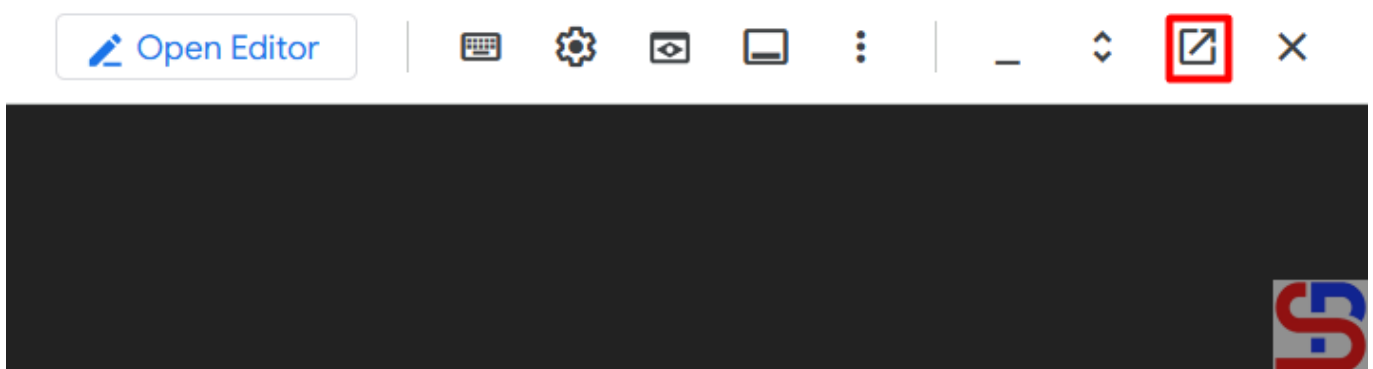
The Cloud Shell

After you click **Continue** and wait a minute, the screen shown in the picture below will appear:



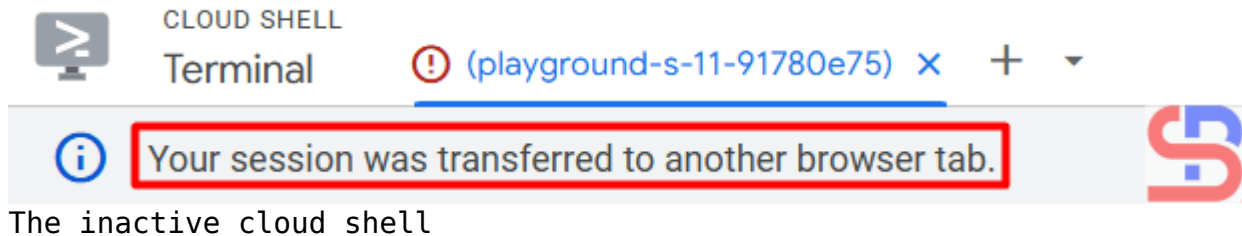
Click Authorize

Click **Authorize**, and the cloud shell is ready to use. If you want the cloud shell to have a larger screen, you can click the button below:



Click the icon

And the existing cloud shell will be inactive, as shown in the image below, so that the cloud shell will move to a new tab:



B. Run the command

By default, you can use the command below to display the options to create a virtual machine:

```
gcloud compute instances create --help
```

From the image above, you can see that you have many options. But actually, you can only use 3 options to make a VM: the zone, machine types, and image options. You have to know that by default, a VM will automatically get a hard drive size of 10 GB, so you don't need to determine the size of a hard drive on a VM. To see the available zone options, use the command below:

```
gcloud compute zones list
```

Use the following command to view the machine type you wish to use:

```
gcloud compute machine-types list
```

To see the available images, use the command below:

```
gcloud compute images list
```

So, if you want to create a virtual machine in zone us-central1-c, use machine-type e2-standard-2, and use OS Ubuntu 24.04, use the command below:

```
gcloud compute instances create vm-cloud \
--zone=us-central1-c \
```

```
--machine-type "e2-standard-2" \
--image-project "ubuntu-os-cloud" \
--image-family "ubuntu-2404-lts-amd64" \
--subnet "default"
```

After that, check the existing VM in GCP using the command below:

```
gcloud compute instances list
```

The VM should be made as shown below:

```
cloud_user_p_099e306e@cloudshell:~ (playground-s-11-91780e75) $ gcloud compute instances list
Listed 0 items.
cloud_user_p_099e306e@cloudshell:~ (playground-s-11-91780e75) $
cloud_user_p_099e306e@cloudshell:~ (playground-s-11-91780e75) $ gcloud compute instances create vm-cloud \
--zone=us-central1-c \
--machine-type "e2-standard-2" \
--image-project "ubuntu-os-cloud" \
--image-family "ubuntu-2404-lts-amd64" \
--subnet "default"
Created [https://www.googleapis.com/compute/v1/projects/playground-s-11-91780e75/zones/us-central1-c/instances/vm-cloud].
NAME: vm-cloud
ZONE: us-central1-c
MACHINE_TYPE: e2-standard-2
PREEMPTIBLE:
INTERNAL_IP: 10.128.0.2
EXTERNAL_IP: 35.224.230.13
STATUS: RUNNING
cloud_user_p_099e306e@cloudshell:~ (playground-s-11-91780e75) $
cloud_user_p_099e306e@cloudshell:~ (playground-s-11-91780e75) $ gcloud compute instances list
NAME: vm-cloud
ZONE: us-central1-c
MACHINE_TYPE: e2-standard-2
PREEMPTIBLE:
INTERNAL_IP: 10.128.0.2
EXTERNAL_IP: 35.224.230.13
STATUS: RUNNING
cloud_user_p_099e306e@cloudshell:~ (playground-s-11-91780e75) $
```

Create the VM using CLI

Or you can see the list of the VMs in the **VM instances** page in the image below:

The screenshot displays the GCP VM instances page. The left sidebar shows the navigation menu with 'VM instances' selected. The main content area shows a table of VM instances. The table has columns for Status, Name, Zone, Recommendations, In use by, Internal IP, External IP, and Connect. One instance is listed: 'vm-cloud' in the 'us-central1-c' zone. Below the table, there are four related actions: 'Explore Backup and DR', 'Monitor VMs', 'Explore VM logs', and 'Set up firewall rules'.

Status	Name	Zone	Recommendations	In use by	Internal IP	External IP	Connect
☒	vm-cloud	us-central1-c			10.128.0.5 (nic0)	104.198.217.248 (nic0)	SSH

The new VM appears in the GCP

Note

If you want to create a VM with a 50GB hard drive, use the command below:

```
gcloud compute instances create vm-cloud \  
--zone=us-central1-c \  
--machine-type "e2-standard-2" \  
--image-project "ubuntu-os-cloud" \  
--image-family "ubuntu-2404-lts-amd64" \  
--boot-disk-size=50GB \  
--boot-disk-type=pd-standard \  
--subnet "default"
```

References

cloud.google.com

medium.com

diana-moraa.medium.com

youtube.com

[How to Install gcloud on a Linux Server?](#)

written by sysadmin | 30 April 2025

The previous articles explained how to install gcloud on [Ubuntu/Debian](#) distros and [RockyLinux/AlmaLinux/CentOS](#) distros. This article will explain how to install gcloud on Linux.

Problem

How to install gcloud on a Linux server?

Solution

If you use Linux other than the Ubuntu/Debian distro and the RockyLinux/AlmaLinux/CentOS distro, and you want to install gcloud on your Linux distro, then below are the steps (I use OpenSUSE 15 distro):

A. Install gcloud

As far as I know, there are 2 methods for installing on a Linux server, and both methods recommend using a user other than root.

1. Use the script

Before you install gcloud using the script, make sure there are tar and curl packages, and **Python version 3.8 and up** on your server. You can check it with the following command:

```
python3 --version
```

After that, use the following command to download and install the script:

```
curl https://sdk.cloud.google.com | bash
```

Then you will see a display like the one below:

```
sysadmin@OpenSUSE15:~> curl https://sdk.cloud.google.com | bash
% Total % Received % Xferd Average Speed Time Time Time Current
Dload Upload Total Spent Left Speed
100 443 100 443 0 0 617 0 --:--:-- --:--:-- --:--:-- 617
Downloading Google Cloud SDK install script: https://dl.google.com/dl/cloudsdk/channels/rapid/install_google_cloud_sdk.bash
##### 100.0%
Running install script from: /tmp/tmp.VRTkvQAFkG/install_google_cloud_sdk.bash
which curl
curl -# -f https://dl.google.com/dl/cloudsdk/channels/rapid/google-cloud-sdk.tar.gz
##### 100.0%

Installation directory (this will create a google-cloud-sdk subdirectory) (/home/sysadmin):
mkdir -p /home/sysadmin
tar -C /home/sysadmin -zxvf /tmp/tmp.RHVVSyaqZY/google-cloud-sdk.tar.gz
google-cloud-sdk/install/download/
google-cloud-sdk/install/core.manifest
google-cloud-sdk/install/core.snapshot.json
google-cloud-sdk/install/gcloud-deps.manifest
google-cloud-sdk/install/gcloud-deps.snapshot.json
google-cloud-sdk/LICENSE
google-cloud-sdk/README
google-cloud-sdk/RELEASE_NOTES
```

Install gcloud using the script

Wait until it's finished, and you will see a display like the one below:

```
Modify profile to update your $PATH and enable shell command completion?

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

The Google Cloud SDK installer will now prompt you to update an rc file to bring the Google Cloud CLIs into your environment.

Enter a path to an rc file to update, or leave blank to use [/home/sysadmin/.bashrc]:
Backing up [/home/sysadmin/.bashrc] to [/home/sysadmin/.bashrc.backup].
[/home/sysadmin/.bashrc] has been updated.

==> Start a new shell for the changes to take effect.

For more information on how to get started, please visit:
https://cloud.google.com/sdk/docs/quickstarts

sysadmin@opensuse15:~>
```

Installation complete

From the image above, you are asked to create a new SSH connection so that the effect can be seen, and type the command below:

```
./google-cloud-sdk/bin/gcloud version
```

```
sysadmin@OpenSUSE15:~> ./google-cloud-sdk/bin/gcloud version
Google Cloud SDK 506.0.0
bq 2.1.11
bundled-python3-unix 3.11.9
core 2025.01.10
gcloud-crc32c 1.0.0
gsutil 5.33
sysadmin@OpenSUSE15:~>
```

Execute the gcloud version command

If you want to type the gcloud command without having to type **./google-cloud-sdk/bin/gcloud**, then run the command below:

```
echo "alias gcloud=./google-cloud-sdk/bin/gcloud" >> ~/.bashrc
source ~/.bashrc
```

```
sysadmin@OpenSUSE15:~> echo "alias gcloud=./google-cloud-sdk/bin/gcloud" >> ~/.bashrc
sysadmin@OpenSUSE15:~> source ~/.bashrc
sysadmin@OpenSUSE15:~>
sysadmin@OpenSUSE15:~> gcloud version
Google Cloud SDK 506.0.0
bq 2.1.11
bundled-python3-unix 3.11.9
core 2025.01.10
gcloud-crc32c 1.0.0
gsutil 5.33
sysadmin@OpenSUSE15:~>
```



Make an alias for gcloud

2. Using the installer

Run the following commands to install gcloud on your Linux server:

```
curl -O
https://dl.google.com/dl/cloudsdk/channels/rapid/downloads/google-cloud-cli-l
inux-x86_64.tar.gz
tar -xvf google-cloud-cli-linux-x86_64.tar.gz
./google-cloud-sdk/install.sh
```

After installation completes, use the following command to test the gcloud command:

```
./google-cloud-sdk/bin/gcloud version
```

B. Connect to GCP

After you install gcloud on your server, type the command below:

```
gcloud init
```

Then there will be a display like the image below:

```
sysadmin@opensuse15:~> ./google-cloud-sdk/bin/gcloud init
Welcome! This command will take you through the configuration of gcloud.

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).

You must sign in to continue. Would you like to sign in (Y/n)? Y

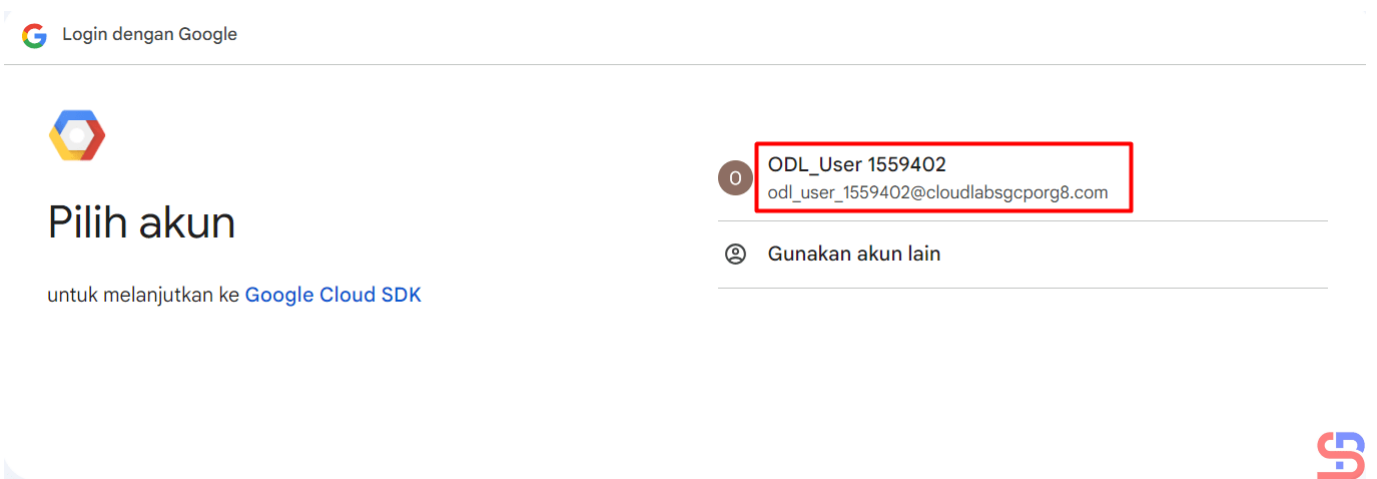
Go to the following link in your browser, and complete the sign-in prompts:

https://accounts.google.com/o/oauth2/auth?response_type=code&client_id=32555940559.apps.googleusercontent.com&redirect_uri=https%3A%2F%2Fsdk.cloud.google.com%2Fauthcode.html&scope=openid+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fuserinfo.email+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fcloud-platform+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fappengine.admin+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fsqlservice.login+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fcompute+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Faccounts.reauth&state=yc9SQLiLi1KjGvYATab4jXoWAcMk82&prompt=consent&token_usage=remote&access_type=offline&code_challenge=J_yzY9wtYds3zIu8LVY3p0Rsjj7i14J4esie4vzIws8&code_challenge_method=S256

Once finished, enter the verification code provided in your browser: 4/0AanRRruxckAB2UdqCAh6WRV6ThbhvLt6YzBr6ZGBmXjsjM7j4opyupHolz0Zcq-EW7wJ2w
You are signed in as: [odl_user_1559114@cloudlabsgcporg8.com].
```

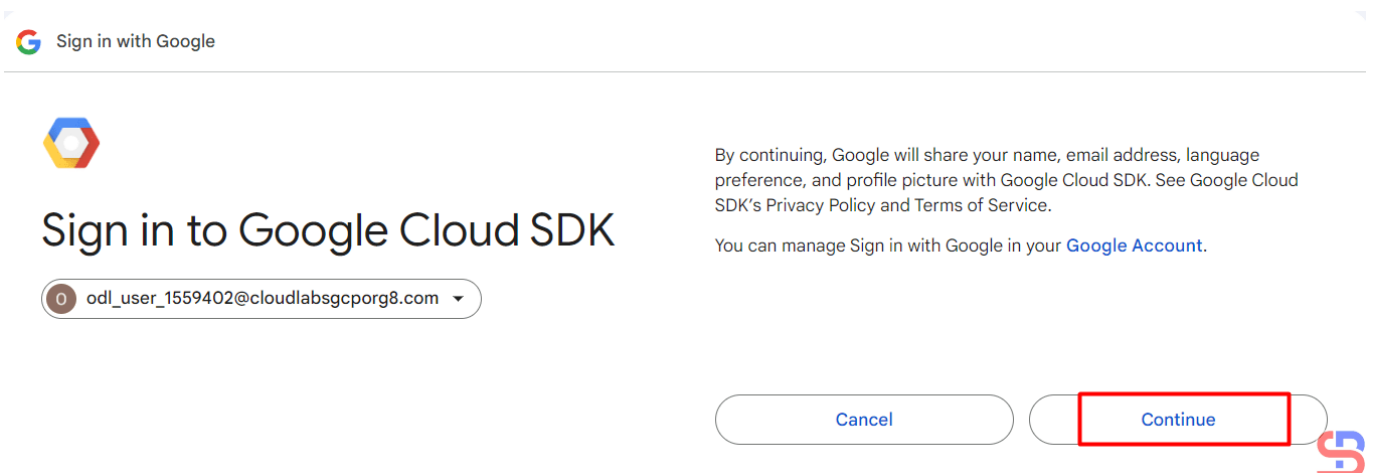
Click the link

Click the **Ctrl+Click** button in the red box to open the link in a browser, or if you have difficulty, copy what is in the red box and place it in your browser so you will see a display like the one below:



Click the account

Click on the Google account that will access GCP, then there will be a display like the image below:



Click the Continue button

Click the **Continue** button, then the display below will appear:

 Sign in with Google



Google Cloud SDK wants to access your Google Account

 odl_user_1559402@cloudlabsgcporg8.com

This will allow **Google Cloud SDK** to:

- See, edit, configure, and delete your Google Cloud data and see the email address for your Google Account. ⓘ
- View and sign in to your Google Cloud SQL instances ⓘ
- View and manage your Google Compute Engine resources ⓘ
- View and manage your applications deployed on Google App Engine ⓘ

Make sure you trust Google Cloud SDK

 [Learn why you're not seeing links to Google Cloud SDK's Privacy Policy or Terms of Service](#)

Review Google Cloud SDK's Privacy Policy and Terms of Service to understand how Google Cloud SDK will process and protect your data.

To make changes at any time, go to your [Google Account](#).

Learn how Google helps you [share data safely](#).

Cancel

Allow



Click the Allow button

Click the **Allow** button, then the display below will appear:



Sign in to the gcloud CLI

You are seeing this page because you ran the following command in the gcloud CLI from this or another machine. If this is not the case, close this tab.

```
gcloud auth login --no-launch-browser
```

Enter the following verification code in gcloud CLI on the machine you want to log into. This is a credential **similar to your password** and should not be shared with others.

```
4/0AanRRruchiESKnvxMD0H4Ds5LcSFkfAXgo5  
SwDxgHetI-Nftseo4ebZab4TwnivEeqjh9w
```

Copy

You can close this tab when you're done.



Click the Copy button

Click the **Copy** button, and paste it into the CLI on your server as in the image below:

Go to the following link in your browser, and complete the sign-in prompts:

https://accounts.google.com/o/oauth2/auth?response_type=code&client_id=32555948559.apps.googleusercontent.com&redirect_uri=https%3A%2F%2Fsdg.cloud.google.com%2Fauthcode.html&scope=openid+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fuserinfo_email+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fcloud-platform+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fappengine.admin+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fsqlservice_login+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fcompute+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Faccounts.reauth&state=d2JSQAga1WPHQzfxNj5AaQnyXvU16&prompt=consent&token_usage=remote&access_type=offline&code_challenge=JA4vnyv8K9ZHcrJ9WQ248aHXUoszw91xk8HhNb1VN7Dw&code_challenge_method=S256

Once finished, enter the verification code provided in your browser: **4/0AanRRruchiESKnvxMD0H4Ds5LcSFkFAXgo5SwDxgHetI-Nftseo4ebZab4TwnivEeqjh9w**

You are signed in as: [odl_user_1559482@cloudlabsgcporg8.com].

Pick cloud project to use:

- [1] clgcporg8-883
- [2] Enter a project ID
- [3] Create a new project

Please enter numeric choice or text value (must exactly match list item): **1**

Your current project has been set to: [clgcporg8-883].

Do you want to configure a default Compute Region and Zone? (Y/n)? **Y**

Which Google Compute Engine zone would you like to use as project default?

If you **do not** specify a zone via a command line flag while working with Compute Engine resources, the default is assumed.

- [1] us-east1-b
- [2] us-east1-c

Paste the code

Select the project and configure the zone as in the image above. After that, the gcloud configuration is complete.

C. Test gcloud

Now, try gcloud to access your GCP. I try to list my virtual machine in GCP using the below command:

```
gcloud compute instances list
```

Then the display below will appear:

```
sysadmin@opensuse15:~> gcloud compute instances list
NAME          ZONE      MACHINE_TYPE  PREEMPTIBLE  INTERNAL_IP  EXTERNAL_IP  STATUS
my-first-vm   us-west1-a  e2-medium      10.138.15.202  35.197.111.231  RUNNING
```

Display virtual machine in GCP using gcloud

If you get a display like the one above, you have successfully used gcloud to access your GCP.

Note

If you have many projects on your GCP, you can choose one of these projects as the starting point for your gcloud on GCP. You can switch projects using the command:

```
gcloud config set project PROJECT_ID
```

Change **PROJECT_ID** to the project ID you want to switch to.

References

cloud.google.com

liquidweb.com

bacancytechnology.com

How to Install gcloud on Ubuntu?

written by sysadmin | 30 April 2025

[The previous article](#) explained how to install gcloud on RockyLinux/AlmaLinux/CentOS. This article will explain how to install gcloud on Ubuntu.

Problem

How to install gcloud on Ubuntu?

Solution

Here are the steps to install gcloud on Ubuntu/Debian:

A. Install gcloud

As far as I know, there are 3 methods to install gcloud on Ubuntu/Debian and the methods recommend using a user other than root.

1. Using the script

Before you download the script, install the packages using the command below:

```
sudo apt update  
sudo apt-get install curl tar
```

Use the below command to download and install the script:

```
curl https://sdk.cloud.google.com | bash
```

Then you will see a display like the one below:

```
sysadmin@ubuntu2404:~$ curl https://sdk.cloud.google.com | bash
% Total % Received % Xferd Average Speed Time Time Time Current
Dload Upload Total Spent Left Speed
100 443 100 443 0 0 522 0 --:--:-- --:--:-- --:--:-- 522
Downloading Google Cloud SDK install script: https://dl.google.com/dl/cloudsdk/channels/rapid/install_google_cloud_sdk_bash
##### 100.0%
Running install script from: /tmp/tmp.KdzEssdMdb/install_google_cloud_sdk_bash
which curl
curl -# -f https://dl.google.com/dl/cloudsdk/channels/rapid/google-cloud-sdk.tar.gz
##### 100.0%

Installation directory (this will create a google-cloud-sdk subdirectory) (/home/sysadmin):
mkdir -p /home/sysadmin
tar -C /home/sysadmin -zxvf /tmp/tmp.JCXui5IeA1/google-cloud-sdk.tar.gz
google-cloud-sdk/.install/download/
google-cloud-sdk/.install/core.manifest
google-cloud-sdk/.install/core.snapshot.json
google-cloud-sdk/.install/gcloud-deps.manifest
google-cloud-sdk/.install/gcloud-deps.snapshot.json
```

Install gcloud using the script

Wait until it's finished, and you will see a display like the one below:

```
Modify profile to update your $PATH and enable shell command completion?

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

The Google Cloud SDK installer will now prompt you to update an rc file to bring the Google Cloud CLIs into your environment.

Enter a path to an rc file to update, or leave blank to use [/home/sysadmin/.bashrc]:
Backing up [/home/sysadmin/.bashrc] to [/home/sysadmin/.bashrc.backup].
[/home/sysadmin/.bashrc] has been updated.

==> Start a new shell for the changes to take effect.

For more information on how to get started, please visit:
https://cloud.google.com/sdk/docs/quickstarts

sysadmin@ubuntu2404:~$
```

Installation complete

From the image above, you are asked to create a new SSH connection so that the effect can be seen, and type the command below:

```
gcloud version
```

However, you can use the command below:

```
source /home/sysadmin/.bashrc
```

So you don't need to create a new SSH connection to run the

gcloud version command, which results in the image below:

```
Modify profile to update your $PATH and enable shell command completion?
Do you want to continue (Y/n)? Y

The Google Cloud SDK installer will now prompt you to update an rc file to bring the Google Cloud CLIs into your environment.

Enter a path to an rc file to update, or leave blank to use [/home/sysadmin/.bashrc]:
Backing up [/home/sysadmin/.bashrc] to [/home/sysadmin/.bashrc.backup].
[/home/sysadmin/.bashrc] has been updated.

==> Start a new shell for the changes to take effect.

For more information on how to get started, please visit:
https://cloud.google.com/sdk/docs/quickstarts

sysadmin@ubuntu2404:~$ source /home/sysadmin/.bashrc
sysadmin@ubuntu2404:~$
sysadmin@ubuntu2404:~$ gcloud version
Google Cloud SDK 504.0.1
bq 2.1.11
bundled-python3-unix 3.11.9
core 2024.12.19
gcloud-crc32c 1.0.0
gsutil 5.33
sysadmin@ubuntu2404:~$
```

Check the result of the installation

2. Using the repository

Type the following commands to install gcloud on the Ubuntu/Debian distro:

```
sudo apt update
echo 'deb [signed-by=/usr/share/keyrings/cloud.google.gpg]
https://packages.cloud.google.com/apt cloud-sdk main' | sudo tee -a
sudo apt-get -y install apt-transport-https ca-certificates gnupg
curl https://packages.cloud.google.com/apt/doc/apt-key.gpg | sudo apt-key --
keyring /usr/share/keyrings/cloud.google.gpg add -
sudo apt update
sudo apt-get install -y google-cloud-sdk
```

3. Using the snap

Run the below command to install gcloud:

```
sudo snap install google-cloud-sdk --classic
```

B. Connect to GCP

After you install gcloud on your server, type the command below:

gcloud init

Then there will be a display like the image below:

```
sysadmin@ubuntu2404:~$ gcloud init
Welcome! This command will take you through the configuration of gcloud.

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).

You must sign in to continue. Would you like to sign in (Y/n)? Y

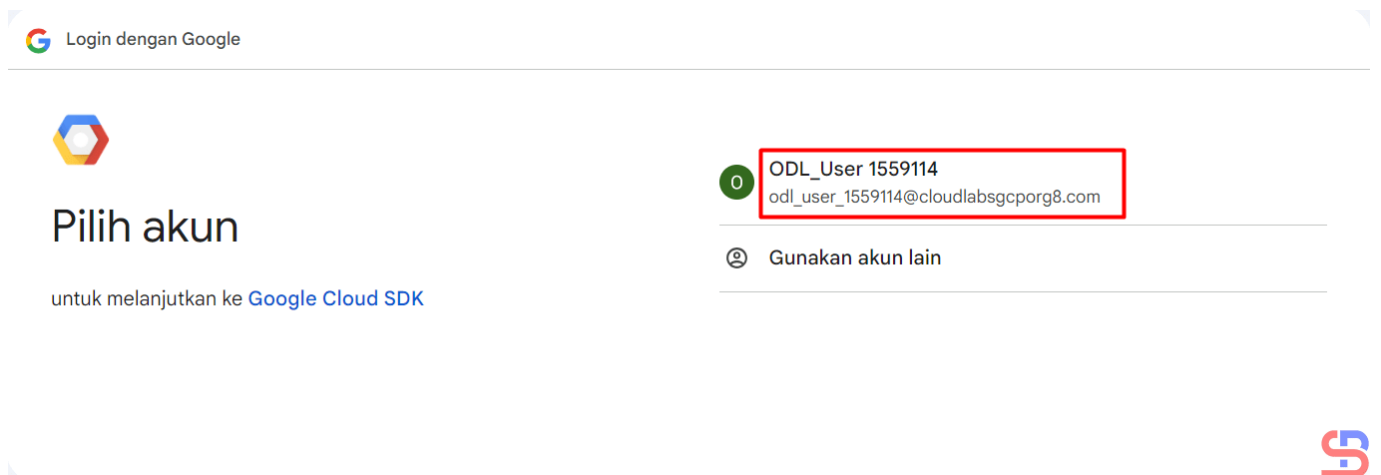
Go to the following link in your browser, and complete the sign-in prompts:

  https://accounts.google.com/o/oauth2/auth?response_type=code&client_id=32555940559.apps.googleusercontent.com&redirect_uri=https%3A%2F%2Fsdk.cloud.google.com%2Fauthcode.html&scope=openid+h
  ttps%3A%2F%2Fwww.googleapis.com%2Fauth%2Fuserinfo_email+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fcloud-platform+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fappengine.admin+https%3A%2F%2Fwww.goo
  gleapis.com%2Fauth%2Fsqlservice.login+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fcompute+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Faccounts.reauth&state=08JBQKFxFCBeS5dfQda1xJ4oe1Pt7&prompt=co
  nsent&token_usage=remote&access_type=offline&code_challenge=kFwpqTjuiD-4h6mgUkv8m_dnb9vYU0eyFTCN8Yi38&code_challenge_method=S256

Once finished, enter the verification code provided in your browser: 
```

Click the link

You can open the link in a browser by clicking the **Ctrl+Click** button located in the red box. If you are having trouble doing so, copy what is included in the red box and paste it into your browser. This will allow you to view a display similar to the one that is shown below:



Click the account

When you click on your Google account, that will allow you to access GCP, and a display similar to the one shown below will appear:



Sign in to Google Cloud SDK

odl_user_1559114@cloudlabsgcporg8.com

By continuing, Google will share your name, email address, language preference, and profile picture with Google Cloud SDK. See Google Cloud SDK's Privacy Policy and Terms of Service.

You can manage Sign in with Google in your [Google Account](#).

Cancel

Continue



Click the Continue button

After you click the **Continue** button, the screen below will show:



Google Cloud SDK wants to access your Google Account

odl_user_1559114@cloudlabsgcporg8.com

This will allow **Google Cloud SDK** to:

- See, edit, configure, and delete your Google Cloud data and see the email address for your Google Account. ⓘ
- View and sign in to your Google Cloud SQL instances ⓘ
- View and manage your Google Compute Engine resources ⓘ
- View and manage your applications deployed on Google App Engine ⓘ

Make sure you trust Google Cloud SDK

[Learn why you're not seeing links to Google Cloud SDK's Privacy Policy or Terms of Service](#)

Review Google Cloud SDK's Privacy Policy and Terms of Service to understand how Google Cloud SDK will process and protect your data.

To make changes at any time, go to your [Google Account](#).

Learn how Google helps you [share data safely](#).

Cancel

Allow



Click the Allow button

When you click the **Allow** button, the screen below will show:



Sign in to the gcloud CLI

You are seeing this page because you ran the following command in the gcloud CLI from this or another machine. If this is not the case, close this tab.

```
gcloud auth login --no-launch-browser
```

Enter the following verification code in gcloud CLI on the machine you want to log into. This is a credential **similar to your password** and should not be shared with others.

```
4/0AanRRrswAY7X0gBsec0s-DSAxb70HXWZEW  
hBaLFucEXKuLBbqEgawA3a2tgSvWtcEBc-g
```

Copy

You can close this tab when you're done.



Click the Copy button

Click the **Copy** button, and paste it into the CLI on your server as in the image below:

```

sysadmin@ubuntu2404:~$ gcloud init
Welcome! This command will take you through the configuration of gcloud.

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).

You must sign in to continue. Would you like to sign in (Y/n)? Y

Go to the following link in your browser, and complete the sign-in prompts:

  https://accounts.google.com/o/oauth2/auth?response_type=code&client_id=32555940559.apps.googleusercontent.com&redirect_uri=https%3A%2F%2Fsdk.cloud.google.com%2Fauthcode.html&scope=openid+h
  ttps%3A%2F%2Fwww.googleapis.com%2Fauth%2Fuserinfo.email+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fcloud-platform+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fappengine.admin+https%3A%2F%2Fwww.goo
  gleapis.com%2Fauth%2Fsqlservice.login+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fcompute+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Faccounts.reauth&state=08JBQKFxFC8eS5dfQda1xJ4oelPt7&prompt=co
  nsent&token_usage=remote&access_type=offline&code_challenge=-KFWpqTjuiD-4h6mgUkv8m_dnbk9yYU0eyFTCN8Yi38&code_challenge_method=S256

Once finished, enter the verification code provided in your browser: 4/0AanRRswAY7X0gBsec0s-DSAx70HXWZEWhBaLFucEXKuLBbqEgawA3a2tgSVWtcEBc-g
You are signed in as: [odl_user_1559114@cloudlabsgcporg8.com].

Pick cloud project to use:
  [1] clgcporg8-072
  [2] Enter a project ID
  [3] Create a new project
Please enter numeric choice or text value (must exactly match list item):

```

Paste the code

Select the project and configure the zone as in the image above. After that, the gcloud configuration is complete, like in the image below:

```

Created a default .boto configuration file at [/home/sysadmin/.boto]. See this file and
[https://cloud.google.com/storage/docs/gsutil/commands/config] for more
information about configuring Google Cloud Storage.
The Google Cloud CLI is configured and ready to use!

* Commands that require authentication will use odl_user_1559114@cloudlabsgcporg8.com by default
* Commands will reference project `clgcporg8-072` by default
* Compute Engine commands will use region `asia-southeast1` by default
* Compute Engine commands will use zone `asia-southeast1-a` by default

Run `gcloud help config` to learn how to change individual settings

This gcloud configuration is called [default]. You can create additional configurations if you work with multiple accounts and/or projects.
Run `gcloud topic configurations` to learn more.

Some things to try next:

* Run `gcloud --help` to see the Cloud Platform services you can interact with. And run `gcloud help COMMAND` to get help on any gcloud command.
* Run `gcloud topic --help` to learn about advanced features of the CLI like arg files and output formatting
* Run `gcloud cheat-sheet` to see a roster of go-to `gcloud` commands.
sysadmin@ubuntu2404:~$

```

Installation of GCP is complete

C. Test gcloud

Now, try gcloud to access your GCP. I try to list my virtual machine in GCP using the below command:

```
gcloud compute instances list
```

Then the display below will appear:

```
sysadmin@ubuntu2404:~$ gcloud compute instances list
```

NAME	ZONE	MACHINE_TYPE	PREEMPTIBLE	INTERNAL_IP	EXTERNAL_IP	STATUS
my-first-vm	us-west1-a	e2-medium		10.138.15.202	35.197.111.231	RUNNING

```
sysadmin@ubuntu2404:~$
```



Display virtual machine in GCP using gcloud

If you get a display like the image above, then you have successfully used your GCloud to access your GCP.

Note

If you have many projects on your GCP, you can choose one of these projects as the starting point for your gcloud on GCP. You can switch projects using the command:

```
gcloud config set project PROJECT_ID
```

Change **PROJECT_ID** to the project ID you want to switch to.

References

cloud.google.com
liquidweb.com
bacancytechnology.com
attuneops.io
tecadmin.net

[How to Create a Virtual Machine in GCP?](#)

written by sysadmin | 30 April 2025

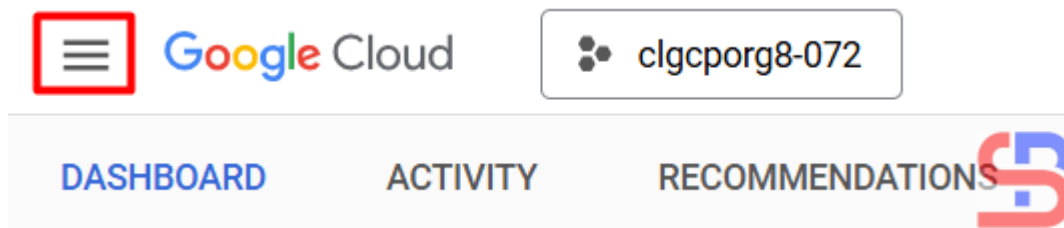
Many people use cloud technology provided by cloud providers such as AWS, GCP, and Azure to support their business operations. One of the features of this technology is the use of a virtual machine, or VM.

Problem

How to create a virtual machine in GCP?

Solution

There are several ways to create a virtual machine or a VM in GCP, but this article will explain how to create a virtual machine in the GCP console. In the GCP Console, at the top left corner, click the Navigation menu, which is symbolized by three lines as in the image below:



Click the icon

Then click **Compute Engine > VM Instances** as in the image below:

The screenshot shows the Google Cloud console interface. On the left, the navigation menu includes 'Cloud overview', 'Solutions', and 'PINNED PRODUCTS'. Under 'PINNED PRODUCTS', 'Compute Engine' is highlighted with a red box. A red arrow points from 'Compute Engine' to the 'VM instances' option in the right-hand menu. The right-hand menu is open, showing 'Overview' and 'PREVIEW' tabs. Under the 'PREVIEW' tab, the 'VIRTUAL MACHINES' section is expanded, and 'VM instances' is highlighted with a red box. Other options in the 'VIRTUAL MACHINES' section include 'Instance templates', 'Sole-tenant nodes', 'Machine images', 'TPUs', 'Committed use discounts', 'Reservations', and 'Migrate to Virtual Machines'. Below this, the 'STORAGE' section includes 'Disks', 'Storage Pools', 'Snapshots', 'Images', and 'Async Replication'. The 'INSTANCE GROUPS' section includes 'Instance groups'. A red 'S' logo is visible in the bottom right corner of the right-hand menu.

Click the VM instance

After that, click the **CREATE INSTANCE** button, then a display will appear as below:

VM instances

CREATE INSTANCE

IMPORT VM

REFRESH

INSTANCES
OBSERVABILITY
INSTANCE SCHEDULES

VM instances


Click the button

You will see a display like the image below:

Machine configuration

e2-medium, us-west1-a

OS and storage

Debian GNU/Linux 12 (bookworm)

Networking

1 network interface

Observability

Security

Advanced

Machine configuration

Name *

my-first-vm

Region *

us-west1 (Oregon)

Region is permanent

Zone *

us-west1-a

Zone is permanent

General purpose

Compute optimized

Memory optimized

Storage optimized

GPUs

Machine types for common workloads, optimized for cost and flexibility

	Series ?	Description	vCPUs ?	Memory ?	Platform
☐	C4	Consistently high performance	2 - 192	4 - 1,488 GB	Intel Emerald Rapids
☐	C4A	Arm-based consistently high performance	1 - 72	2 - 576 GB	Google Axion
☐	N4	Flexible & cost-optimized	2 - 80	4 - 640 GB	Intel Emerald Rapids
☐	C3	Consistently high performance	4 - 192	8 - 1,536 GB	Intel Sapphire Rapids
☐	C3D	Consistently high performance	4 - 360	8 - 2,880 GB	AMD Genoa
☒	E2	Low cost, day-to-day computing	0.25 - 32	1 - 128 GB	Based on availability
☐	N2	Balanced price & performance	2 - 128	2 - 864 GB	Intel Cascade Lake
☐	N2D	Balanced price & performance	2 - 224	2 - 896 GB	AMD EPYC
☐	T2A	Scale-out workloads	1 - 48	4 - 192 GB	Ampere Altra Arm
☐	T2D	Scale-out workloads	1 - 60	4 - 240 GB	AMD EPYC Milan
☐	N1	Balanced price & performance	0.25 - 96	0.6 - 624 GB	Intel Skylake

Machine type

Choose a machine type with preset amounts of vCPUs and memory that suit most workloads. Or, you can create a custom machine for your workload's particular needs. [Learn more](#)

PRESET

CUSTOM

e2-medium (2 vCPU, 1 core, 4 GB memory)



vCPU

1-2 vCPU (1 shared core)



Memory

4 GB

ADVANCED CONFIGURATIONS

Fill in the columns in the machine configuration section

In the **Machine Configuration** section, you have to write the name of the VM, the location of the VM, the CPU, the RAM, and the type of machine that will be used in your VM. I

wrote down my VM requirements as in the picture above. After filling in this section, click the **OS and storage** section. Here you can choose the OS you use and how many hard disk sizes you want in the VM using the **CHANGE** button:

Machine configuration
e2-medium, us-west1-a

OS and storage
Debian GNU/Linux 12 (bookworm)

Networking
1 network interface

Observability

Security

Advanced

Operating system and storage

Name	my-first-vm
Type	New balanced persistent disk
Size	10 GB
Snapshot schedule ?	No schedule selected
License type ?	Free
Image	Debian GNU/Linux 12 (bookworm)

CHANGE

Additional storage and VM backups

+ ADD NEW DISK **+ ATTACH EXISTING DISK** **+ ADD LOCAL SSD**

Backup plan **PREVIEW**

Secure your backups against deletion through backup vault storage and enable centralized backup management across projects. Managed by Backup and DR Service, a separate service from Compute Engine with independent certifications and accreditation. [Learn more](#)

Backup plan SELECT A PLAN ?

Container ?

Deploy a container image to this VM instance

DEPLOY CONTAINER

Fill in the OS and storage section

After that, in the Networking section, you have to fill in the network requirements for the VM. I filled it in as shown in the image below. I don't fill in the **Observability**, **Security**, and **Advanced** sections because I don't need them for my virtual machine.

- Machine configuration
e2-medium, us-west1-a
- OS and storage
Debian GNU/Linux 12
(bookworm)
- Networking**
2 firewall rules, 1 network interface
- Observability
- Security
- Advanced

Networking

Firewall ?

Add tags and firewall rules to allow specific network traffic from the Internet

☒ Allow HTTP traffic
 ☒ Allow HTTPS traffic
 ☐ Allow Load Balancer Health Checks

Set a custom hostname for this instance or leave it default. Choice is permanent

IP forwarding ?

☐ Enable

Network performance configuration

Network bandwidth ?

☐ Enable per VM Tier_1 networking performance

Maximum outbound network bandwidth: 2Gbps
VM to Public IP: 2Gbps

Network interfaces ?

Network interface is permanent

☐ default default IPv4 (10.138.0.0/20)

[ADD A NETWORK INTERFACE](#)

CREATE

CANCEL

EQUIVALENT CODE



Fill in the Networking section

After that, I press the **CREATE** button and wait until the virtual machine creation process completes:

VM instances

CREATE INSTANCE

IMPORT VM

REFRESH

INSTANCES
OBSERVABILITY
INSTANCE SCHEDULES

VM instances

Filter
Enter property name or value

☐ Status	Name ↑	Zone	Recommendations	In use by	Internal IP	External IP	Connect
☒	my-first-vm	us-west1-a			10.138.15.202 (nic0)	35.197.111.231 (nic0)	SSH 

The new VM has been created

If you want to access your VM, then press the **SSH** button, and you can see the OS and HDD size on your VM in the image below:

SSH-in-browser

UPLOAD FILE

DOWNLOAD FILE

Linux my-first-vm 6.1.0-28-cloud-amd64 #1 SMP PREEMPT_DYNAMIC Debian 6.1.119-1 (2024-11-22) x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.

odl_user_1559114@my-first-vm:~\$ df -h

Filesystem	Size	Used	Avail	Use%	Mounted on
udev	2.0G	0	2.0G	0%	/dev
tmpfs	393M	448K	393M	1%	/run
/dev/sda1	9.7G	2.0G	7.2G	22%	/
tmpfs	2.0G	0	2.0G	0%	/dev/shm
tmpfs	5.0M	0	5.0M	0%	/run/lock
/dev/sda15	124M	12M	113M	10%	/boot/efi
tmpfs	393M	0	393M	0%	/run/user/1000

odl_user_1559114@my-first-vm:~\$

odl_user_1559114@my-first-vm:~\$ cat /etc/*release

PRETTY_NAME="Debian GNU/Linux 12 (bookworm)"

NAME="Debian GNU/Linux"

VERSION_ID="12"

VERSION="12 (bookworm)"

VERSION_CODENAME=bookworm

ID=debian

HOME_URL="https://www.debian.org/"

SUPPORT_URL="https://www.debian.org/support"

BUG_REPORT_URL="https://bugs.debian.org/"

odl_user_1559114@my-first-vm:~\$

Access to the VM using the SSH button

Note

At first glance, it seems easy to create a virtual machine in GCP. However, if you work in real conditions, there will be many options that must be filled in when creating your virtual machine.

References

diana-moraa.medium.com
techrepublic.com