

Google cloud platform project

Apache Web Server on Google Cloud

By Alshaimaa Alamer.

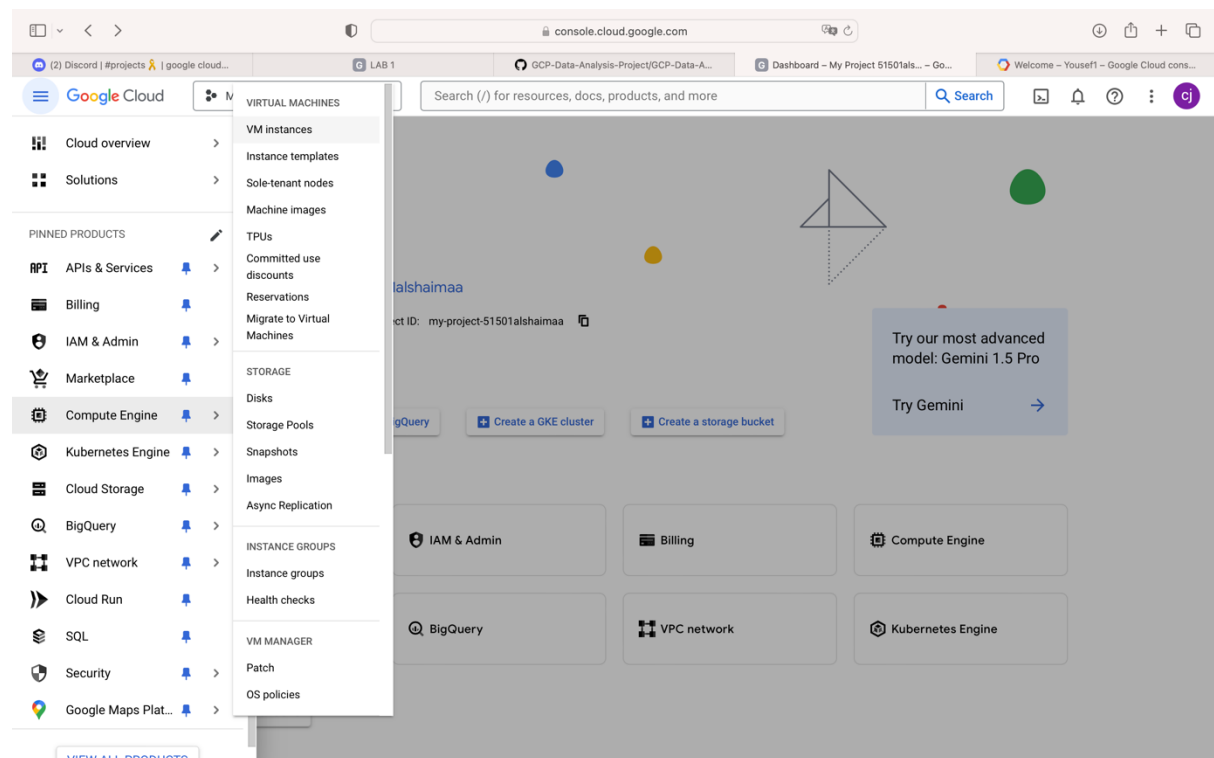
Guidelines:

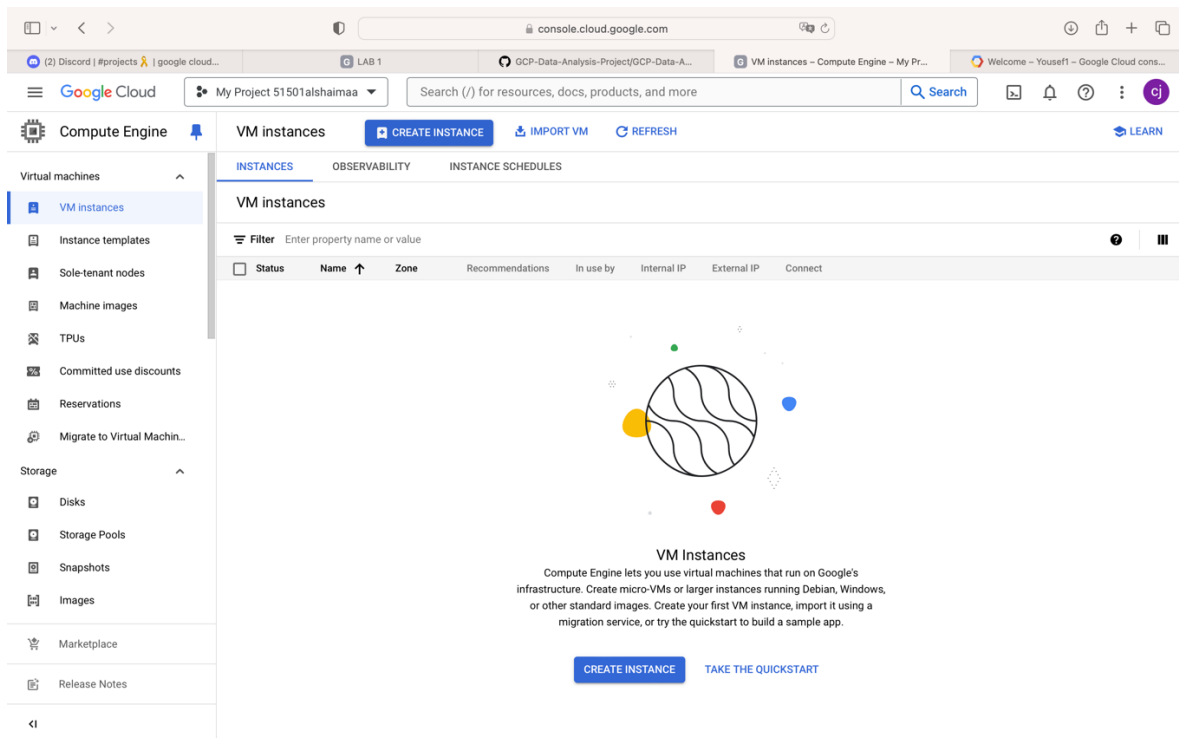
- First make your own GCP account.
- second after you make your account enable compute engine
- third create your first virtual machine

Hands-on-deck \$:~

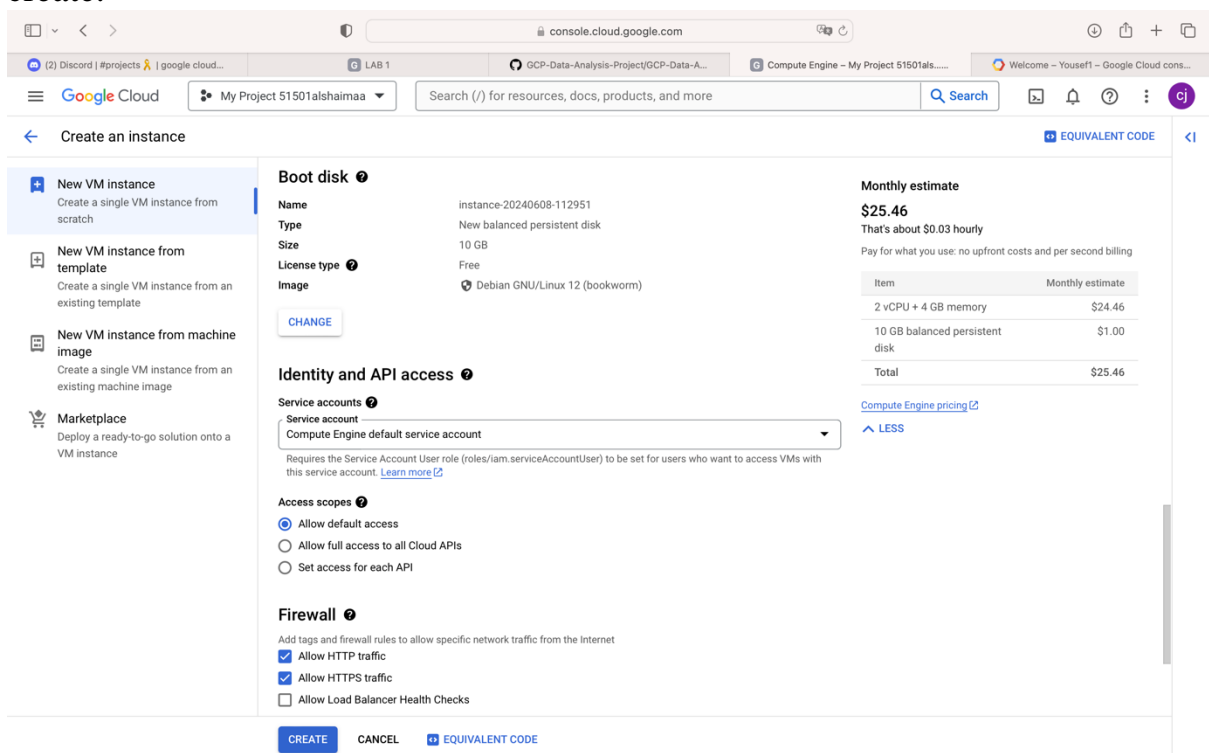
VM settings:

here you make your first VM.



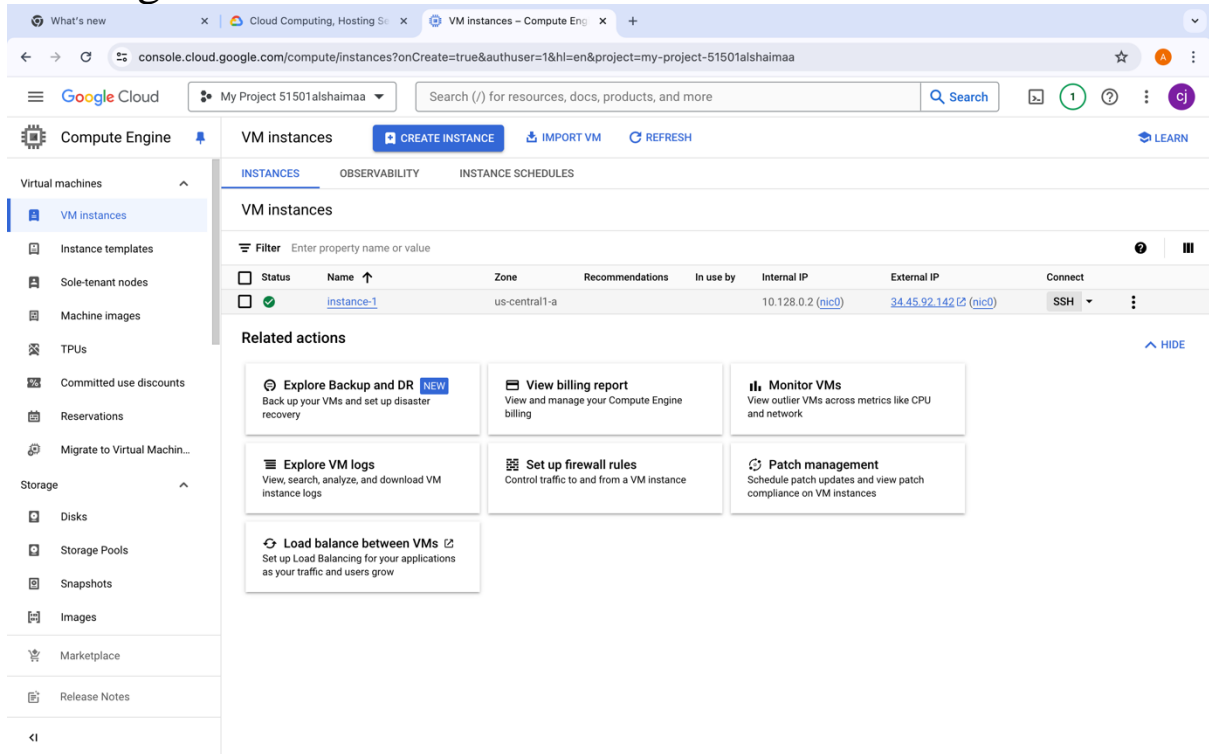


The boot disk settings and the firewall (Allow HTTP and HTTPS traffic) the hit create.



VM SSH:

After we create our first VM, we'll run SSH from clicking the SSH button.



The screenshot shows the Google Cloud Platform console interface. The top navigation bar includes the Google Cloud logo, the project name 'My Project 51501alshaimaa', and a search bar. The left sidebar lists various services under 'Virtual machines' and 'Storage'. The main content area is titled 'VM instances' and shows a table with one instance named 'instance-1'. The instance is in the 'us-central1-a' zone, has an internal IP of '10.128.0.2', and an external IP of '34.45.92.142'. The 'Connect' column shows an 'SSH' button. Below the table, there are several 'Related actions' cards, including 'Explore Backup and DR', 'View billing report', 'Monitor VMs', 'Explore VM logs', 'Set up firewall rules', 'Patch management', and 'Load balance between VMs'.

Status	Name	Zone	Recommendations	In use by	Internal IP	External IP	Connect
<input checked="" type="checkbox"/>	instance-1	us-central1-a			10.128.0.2 (nic0)	34.45.92.142 (nic0)	SSH

Now we open the SSH window.

```
What's new x Cloud Computing, Hosting S... x VM instances - Compute Eng... x ssh.cloud.google.com/v2/ssh... x +
ssh.cloud.google.com/v2/ssh/projects/my-project-51501alshaimaa/zones/us-central1-a/instances/instance-1?authuser=1&hl=en_US&projectNumber=491187086800&us...
SSH-in-browser
Linux instance-1-us-central1-a-c.my-project-51501alshaimaa.internal 6.1.0-21-cloud-amd64 #1 SMP PREEMPT_DYNAMIC Debian 6.1.90-1 (2024-05-03) 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.
cj505jon@instance-1:~$
```

First thing is to update packages by the cmd: **apt-get update**

```
What's new x Cloud C... x VM inst... x ssh.clo... x ssh.clo... x ssh.clo... x Apache... x ssh.clo... x Google... x Di... x Google... x +
ssh.cloud.google.com/v2/ssh/projects/my-project-51501alshaimaa/zones/us-central1-a/instances/instance-20240608-132430?authuser=1&hl=en_US&projectNum...
SSH-in-browser
Linux instance-20240608-132430 6.1.0-21-cloud-amd64 #1 SMP PREEMPT_DYNAMIC Debian 6.1.90-1 (2024-05-03) 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.
cj505jon@instance-20240608-132430:~$ sudo apt-get update
Get:1 file:/etc/apt/mirrors/debian.list Mirrorlist [30 B]
Get:4 file:/etc/apt/mirrors/debian-security.list Mirrorlist [39 B]
Get:7 https://packages.cloud.google.com/apt google-compute-engine-bookworm-stable InRelease [1321 B]
Get:8 https://packages.cloud.google.com/apt cloud-sdk-bookworm InRelease [1652 B]
Get:12 https://deb.debian.org/debian bookworm InRelease [151 kB]
Get:9 https://packages.cloud.google.com/apt google-compute-engine-bookworm-stable/main amd64 Packages [3128 B]
Get:3 https://deb.debian.org/debian bookworm-updates InRelease [55.4 kB]
Get:5 https://deb.debian.org/debian bookworm-backports InRelease [56.5 kB]
Get:16 https://deb.debian.org/debian-security bookworm-security InRelease [48.0 kB]
Get:10 https://packages.cloud.google.com/apt cloud-sdk-bookworm/main amd64 Packages [3065 kB]
Get:11 https://packages.cloud.google.com/apt cloud-sdk-bookworm/main all Packages [1474 kB]
Get:12 https://deb.debian.org/debian bookworm-backports/main Sources.diff/Index [63.3 kB]
Ign:12 https://deb.debian.org/debian bookworm-backports/main Sources.diff/Index
Get:13 https://deb.debian.org/debian bookworm-backports/main amd64 Packages.diff/Index [63.3 kB]
Get:14 https://deb.debian.org/debian bookworm-backports/main Translation-en.diff/Index [63.3 kB]
Get:16 https://deb.debian.org/debian bookworm-backports/main amd64 Packages T-2024-06-08-0205.15-F-2024-05-16-0222.10.pdiff [79.0 kB]
Get:16 https://deb.debian.org/debian bookworm-backports/main amd64 Packages T-2024-06-08-0205.15-F-2024-05-16-0222.10.pdiff [79.0 kB]
Get:20 https://deb.debian.org/debian bookworm-backports/main Translation-en T-2024-06-05-2005.29-F-2024-05-16-0222.10.pdiff [30.4 kB]
Get:20 https://deb.debian.org/debian bookworm-backports/main Translation-en T-2024-06-05-2005.29-F-2024-05-16-0222.10.pdiff [30.4 kB]
Get:15 https://deb.debian.org/debian bookworm-backports/main Sources [227 kB]
Get:17 https://deb.debian.org/debian-security bookworm-security/main Sources [97.9 kB]
Get:18 https://deb.debian.org/debian-security bookworm-security/main amd64 Packages [158 kB]
Get:19 https://deb.debian.org/debian-security bookworm-security/main Translation-en [95.2 kB]
Fetched 5734 kB in 1s (4813 kB/s)
Reading package lists... Done
cj505jon@instance-20240608-132430:~$
```

After that install apache2 server the cmd: **apt-get install apache2 -y**

```
What's r x Cloud C x VM inst x ssh.clo x ssh.clo x ssh.clo x Apache x ssh.clo x Google x Google x +
ssh.cloud.google.com/v2/ssh/projects/my-project-51501aishaimaa/zones/us-central1-a/instances/instance-20240608-132430?authuser=1&hl=en_US&projectNum...
SSH-in-browser
20240608-132430:~$ ssh: apache2: command not found
cj505jon@instance-20240608-132430:~$ sudo apt-get install apache2 -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  apache2-bin apache2-data apache2-utils libapr1 libaprutil1 libaprutil1-dbd-sqlite3 libaprutil1-ldap libjansson4 liblua5.3-0 ssl-cert
Suggested packages:
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom www-browser
The following NEW packages will be installed:
  apache2 apache2-bin apache2-data apache2-utils libapr1 libaprutil1 libaprutil1-dbd-sqlite3 libaprutil1-ldap libjansson4 liblua5.3-0 ssl-cert
0 upgraded, 11 newly installed, 0 to remove and 4 not upgraded.
Need to get 2367 kB of archives.
After this operation, 8454 kB of additional disk space will be used.
Get:1 file:/etc/apt/mirrors/debian-security.list Mirrorlist [39 B]
Get:2 file:/etc/apt/mirrors/debian-security.list Mirrorlist [39 B]
Get:3 https://deb.debian.org/debian bookworm/main amd64 libapr1 amd64 1.7.2-3 [102 kB]
Get:4 https://deb.debian.org/debian bookworm/main amd64 libaprutil1 amd64 1.6.3-1 [87.8 kB]
Get:5 https://deb.debian.org/debian bookworm/main amd64 libaprutil1-dbd-sqlite3 amd64 1.6.3-1 [13.6 kB]
Get:6 https://deb.debian.org/debian bookworm/main amd64 libaprutil1-ldap amd64 1.6.3-1 [11.8 kB]
Get:7 https://deb.debian.org/debian bookworm/main amd64 libjansson4 amd64 2.14-2 [40.8 kB]
Get:8 https://deb.debian.org/debian bookworm/main amd64 liblua5.3-0 amd64 5.3.6-2 [123 kB]
Get:9 https://deb.debian.org/debian-security bookworm-security/main amd64 apache2-bin amd64 2.4.59-1-deb12u1 [1380 kB]
Get:10 https://deb.debian.org/debian-security bookworm-security/main amd64 apache2-data all 2.4.59-1-deb12u1 [160 kB]
Get:11 https://deb.debian.org/debian-security bookworm-security/main amd64 apache2-utils amd64 2.4.59-1-deb12u1 [207 kB]
Get:12 https://deb.debian.org/debian-security bookworm-security/main amd64 apache2 amd64 2.4.59-1-deb12u1 [220 kB]
Get:13 https://deb.debian.org/debian bookworm/main amd64 ssl-cert all 1.1.2 [21.1 kB]
Fetched 2367 kB in 0s (5947 kB/s)
Preconfiguring packages ...
Selecting previously unselected package libapr1:amd64.
(Reading database ... 67702 files and directories currently installed.)
Preparing to unpack .../00-libapr1_1.7.2-3_amd64.deb ...
Unpacking libapr1:amd64 (1.7.2-3) ...
Selecting previously unselected package libaprutil1:amd64.
Preparing to unpack .../01-libaprutil1_1.6.3-1_amd64.deb ...
Unpacking libaprutil1:amd64 (1.6.3-1) ...
Selecting previously unselected package libaprutil1-dbd-sqlite3:amd64.
Preparing to unpack .../02-libaprutil1-dbd-sqlite3_1.6.3-1_amd64.deb ...
Unpacking libaprutil1-dbd-sqlite3:amd64 (1.6.3-1) ...
Selecting previously unselected package libaprutil1-ldap:amd64.
Preparing to unpack .../03-libaprutil1-ldap_1.6.3-1_amd64.deb ...
Unpacking libaprutil1-ldap:amd64 (1.6.3-1) ...
Selecting previously unselected package libjansson4:amd64.
Preparing to unpack .../04-libjansson4_2.14-2_amd64.deb ...
Unpacking libjansson4:amd64 (2.14-2) ...
Selecting previously unselected package liblua5.3-0:amd64.
Preparing to unpack .../05-liblua5.3-0_5.3.6-2_amd64.deb ...
Unpacking liblua5.3-0:amd64 (5.3.6-2) ...
Selecting previously unselected package apache2-bin.
Unpacking apache2-bin.
Setting up apache2-bin (2.4.59-1-deb12u1) ...
Setting up apache2-data (2.4.59-1-deb12u1) ...
Setting up apache2 (2.4.59-1-deb12u1) ...
Enabling module mpm_event.
Enabling module authz_core.
Enabling module authz_host.
Enabling module authn_core.
Enabling module auth_basic.
Enabling module access_compat.
Enabling module authn_file.
Enabling module authz_user.
Enabling module alias.
Enabling module dir.
Enabling module autoindex.
Enabling module env.
Enabling module mime.
Enabling module negotiation.
Enabling module setenvif.
Enabling module filter.
Enabling module deflate.
Enabling module status.
Enabling module reqtimeout.
Enabling conf charset.
Enabling conf localized-error-pages.
Enabling conf other-vhosts-access-log.
Enabling conf security.
Enabling conf 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 man-db (2.11.2-2) ...
Processing triggers for libo-bn (2.36-9deb12u7) ...
cj505jon@instance-20240608-132430:~$ sudo service --status-all
[ + ] apache-htcacheclean
[ + ] apache2
[ + ] apparmor
[ + ] cron
[ + ] dbus
[ + ] exim4
[ + ] havedb
[ + ] hwlock.sh
[ + ] kmod
[ + ] procps
[ - ] screen-cleanup
[ + ] ssh
[ + ] sudo
[ + ] udev
[ + ] unattended-upgrades
[ - ] uuid
```

we install apache2 server successfully but how to check if the server is working the cmd: **service --status-all**

```
What's r x Cloud C x VM inst x ssh.clo x ssh.clo x ssh.clo x Apache x ssh.clo x Google x Google x +
ssh.cloud.google.com/v2/ssh/projects/my-project-51501aishaimaa/zones/us-central1-a/instances/instance-20240608-132430?authuser=1&hl=en_US&projectNum...
SSH-in-browser
20240608-132430:~$ ssh: apache2: command not found
cj505jon@instance-20240608-132430:~$ sudo apt-get install apache2 -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  apache2-bin apache2-data apache2-utils libapr1 libaprutil1 libaprutil1-dbd-sqlite3 libaprutil1-ldap libjansson4 liblua5.3-0 ssl-cert
Suggested packages:
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom www-browser
The following NEW packages will be installed:
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0 upgraded, 11 newly installed, 0 to remove and 4 not upgraded.
Need to get 2367 kB of archives.
After this operation, 8454 kB of additional disk space will be used.
Get:1 file:/etc/apt/mirrors/debian-security.list Mirrorlist [39 B]
Get:2 file:/etc/apt/mirrors/debian-security.list Mirrorlist [39 B]
Get:3 https://deb.debian.org/debian bookworm/main amd64 libapr1 amd64 1.7.2-3 [102 kB]
Get:4 https://deb.debian.org/debian bookworm/main amd64 libaprutil1 amd64 1.6.3-1 [87.8 kB]
Get:5 https://deb.debian.org/debian bookworm/main amd64 libaprutil1-dbd-sqlite3 amd64 1.6.3-1 [13.6 kB]
Get:6 https://deb.debian.org/debian bookworm/main amd64 libaprutil1-ldap amd64 1.6.3-1 [11.8 kB]
Get:7 https://deb.debian.org/debian bookworm/main amd64 libjansson4 amd64 2.14-2 [40.8 kB]
Get:8 https://deb.debian.org/debian bookworm/main amd64 liblua5.3-0 amd64 5.3.6-2 [123 kB]
Get:9 https://deb.debian.org/debian-security bookworm-security/main amd64 apache2-bin amd64 2.4.59-1-deb12u1 [1380 kB]
Get:10 https://deb.debian.org/debian-security bookworm-security/main amd64 apache2-data all 2.4.59-1-deb12u1 [160 kB]
Get:11 https://deb.debian.org/debian-security bookworm-security/main amd64 apache2-utils amd64 2.4.59-1-deb12u1 [207 kB]
Get:12 https://deb.debian.org/debian-security bookworm-security/main amd64 apache2 amd64 2.4.59-1-deb12u1 [220 kB]
Get:13 https://deb.debian.org/debian bookworm/main amd64 ssl-cert all 1.1.2 [21.1 kB]
Fetched 2367 kB in 0s (5947 kB/s)
Preconfiguring packages ...
Selecting previously unselected package libapr1:amd64.
(Reading database ... 67702 files and directories currently installed.)
Preparing to unpack .../00-libapr1_1.7.2-3_amd64.deb ...
Unpacking libapr1:amd64 (1.7.2-3) ...
Selecting previously unselected package libaprutil1:amd64.
Preparing to unpack .../01-libaprutil1_1.6.3-1_amd64.deb ...
Unpacking libaprutil1:amd64 (1.6.3-1) ...
Selecting previously unselected package libaprutil1-dbd-sqlite3:amd64.
Preparing to unpack .../02-libaprutil1-dbd-sqlite3_1.6.3-1_amd64.deb ...
Unpacking libaprutil1-dbd-sqlite3:amd64 (1.6.3-1) ...
Selecting previously unselected package libaprutil1-ldap:amd64.
Preparing to unpack .../03-libaprutil1-ldap_1.6.3-1_amd64.deb ...
Unpacking libaprutil1-ldap:amd64 (1.6.3-1) ...
Selecting previously unselected package libjansson4:amd64.
Preparing to unpack .../04-libjansson4_2.14-2_amd64.deb ...
Unpacking libjansson4:amd64 (2.14-2) ...
Selecting previously unselected package liblua5.3-0:amd64.
Preparing to unpack .../05-liblua5.3-0_5.3.6-2_amd64.deb ...
Unpacking liblua5.3-0:amd64 (5.3.6-2) ...
Selecting previously unselected package apache2-bin.
Unpacking apache2-bin.
Setting up apache2-bin (2.4.59-1-deb12u1) ...
Setting up apache2-data (2.4.59-1-deb12u1) ...
Setting up apache2 (2.4.59-1-deb12u1) ...
Enabling module mpm_event.
Enabling module authz_core.
Enabling module authz_host.
Enabling module authn_core.
Enabling module auth_basic.
Enabling module access_compat.
Enabling module authn_file.
Enabling module authz_user.
Enabling module alias.
Enabling module dir.
Enabling module autoindex.
Enabling module env.
Enabling module mime.
Enabling module negotiation.
Enabling module setenvif.
Enabling module filter.
Enabling module deflate.
Enabling module status.
Enabling module reqtimeout.
Enabling conf charset.
Enabling conf localized-error-pages.
Enabling conf other-vhosts-access-log.
Enabling conf security.
Enabling conf 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 man-db (2.11.2-2) ...
Processing triggers for libo-bn (2.36-9deb12u7) ...
cj505jon@instance-20240608-132430:~$ sudo service --status-all
[ + ] apache-htcacheclean
[ + ] apache2
[ + ] apparmor
[ + ] cron
[ + ] dbus
[ + ] exim4
[ + ] havedb
[ + ] hwlock.sh
[ + ] kmod
[ + ] procps
[ - ] screen-cleanup
[ + ] ssh
[ + ] sudo
[ + ] udev
[ + ] unattended-upgrades
[ - ] uuid
```

Go to External IP and click on it.

Google Cloud console showing VM instances. The instance 'instance-20240608-132430' is listed with an external IP of 34.135.23.157. A notification at the bottom indicates 'Instance deleted'.

Clicking on External IP will lead us to this page

Apache2 Debian Default Page

It works!

This is the default welcome page used to test the correct operation of the Apache2 server after installation on Debian systems. If you can read this page, it means that the Apache HTTP server installed at this site is working properly. You should **replace this file** (located at `/var/www/html/index.html`) before continuing to operate your HTTP server.

If you are a normal user of this web site and don't know what this page is about, this probably means that the site is currently unavailable due to maintenance. If the problem persists, please contact the site's administrator.

Configuration Overview

Debian's Apache2 default configuration is different from the upstream default configuration, and split into several files optimized for interaction with Debian tools. The configuration system is **fully documented in `/usr/share/doc/apache2/README.Debian.gz`**. Refer to this for the full documentation. Documentation for the web server itself can be found by accessing the **manual** if the `apache2-doc` package was installed on this server.

The configuration layout for an Apache2 web server installation on Debian systems is as follows:

```

/etc/apache2/
├── apache2.conf
├── ports.conf
├── mods-enabled
│   ├── *.load
│   └── *.conf
├── conf-enabled
│   └── *.conf
└── sites-enabled
    └── *.conf
  
```

- `apache2.conf` is the main configuration file. It puts the pieces together by including all remaining configuration files when starting up the web server.
- `ports.conf` is always included from the main configuration file. It is used to determine the listening ports for incoming connections, and this file can be customized anytime.
- Configuration files in the `mods-enabled/`, `conf-enabled/` and `sites-enabled/` directories contain particular configuration snippets which manage modules, global configuration fragments, or virtual host configurations, respectively.
- They are activated by symlinking available configuration files from their respective `*-available/`

We upload the index.html and move it to `/var/www/html`

