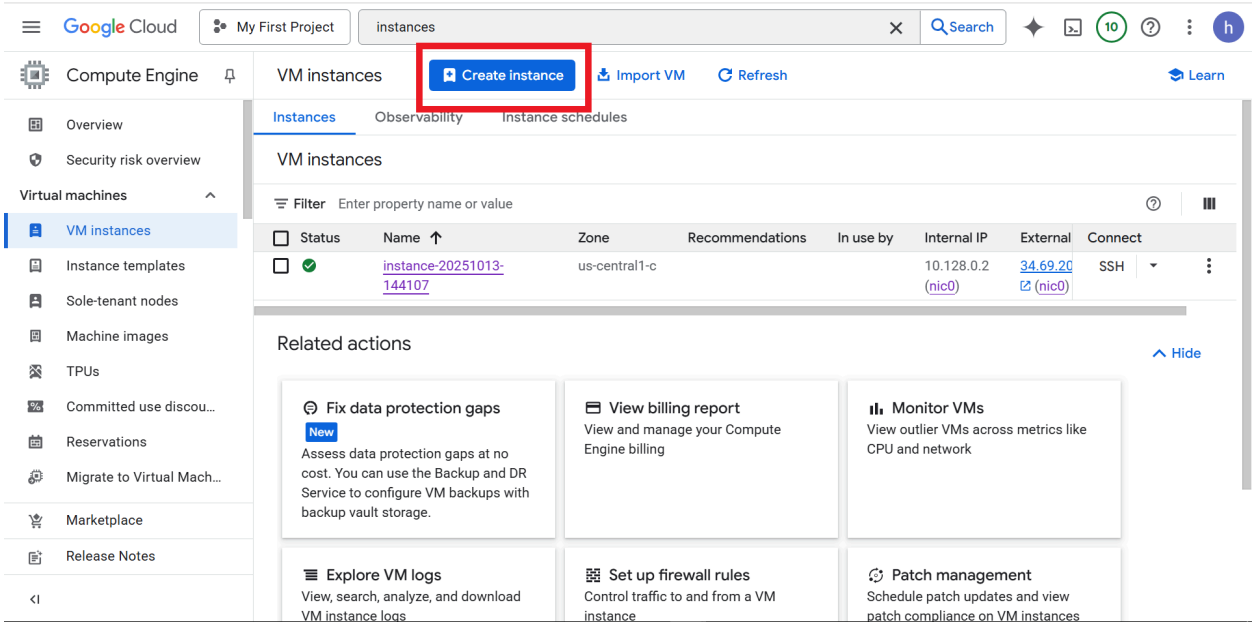
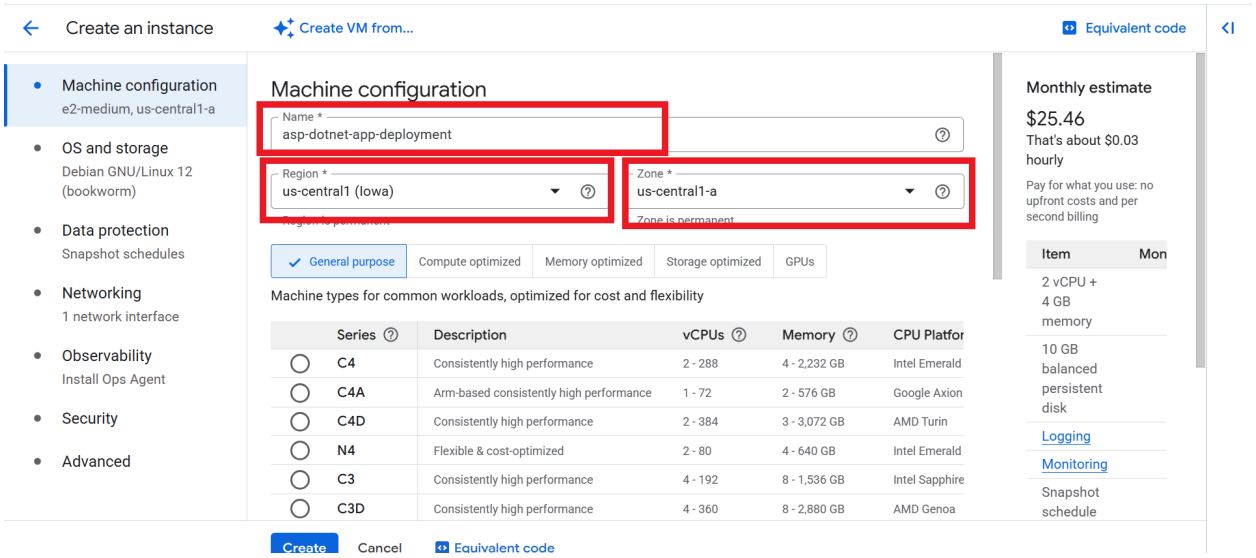
DotNet App Deployment and Database Setup:

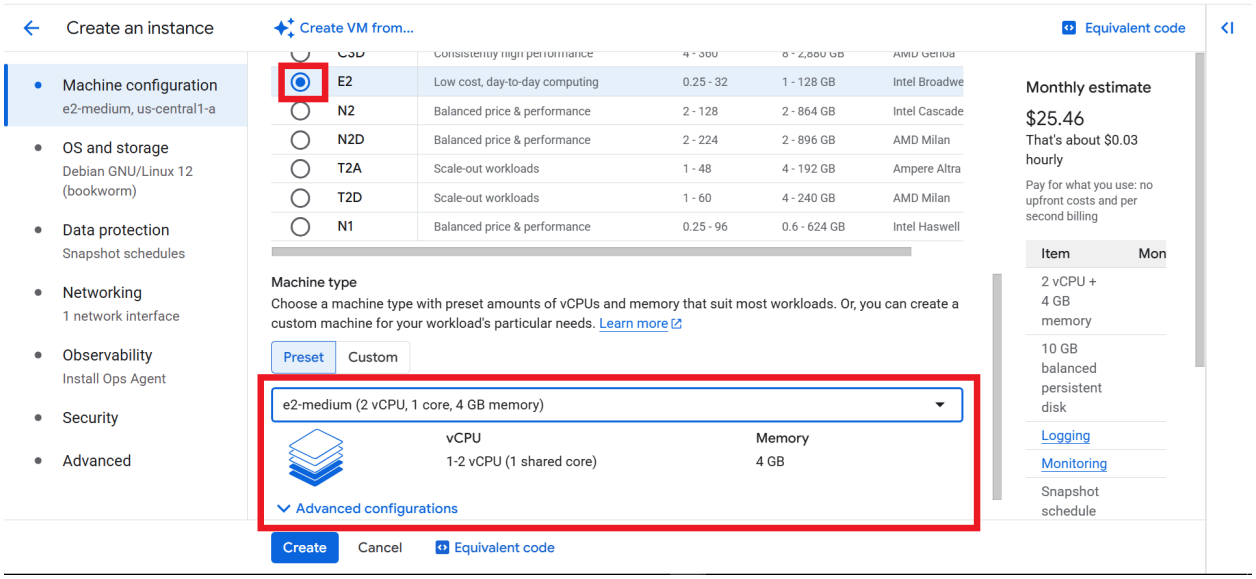
Step1: Create Vm on GCP
Click on Create Instance Button



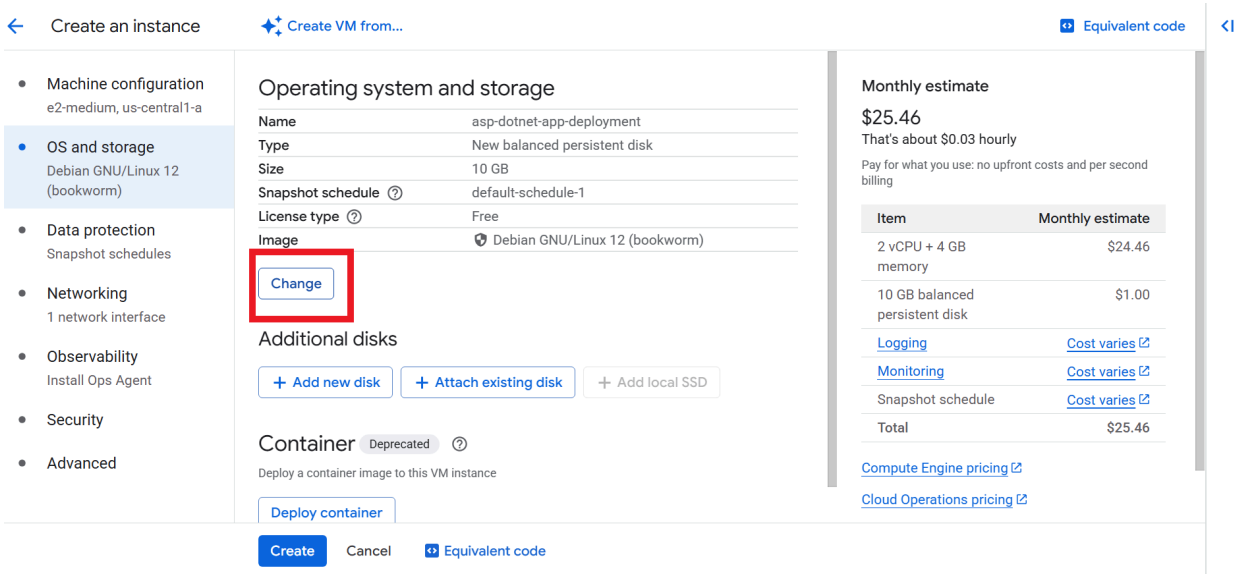
Add the Region and Zone detail:



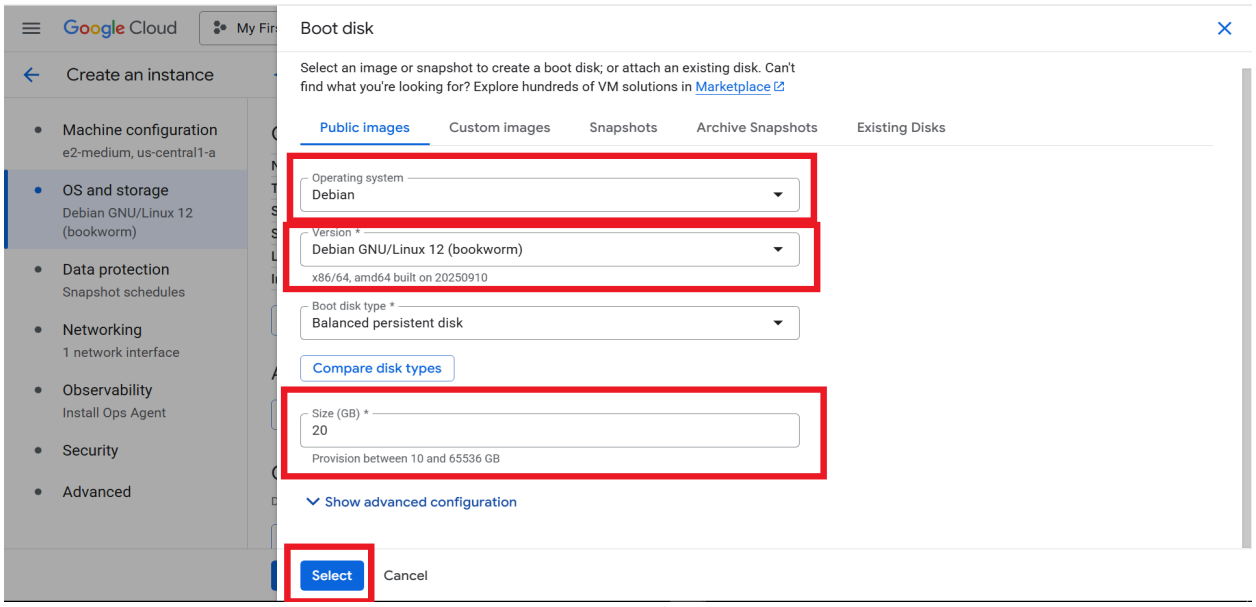
Select the Instance Type and Appropriate Cpu and memory limit
For further customization click on the advanced configurations link



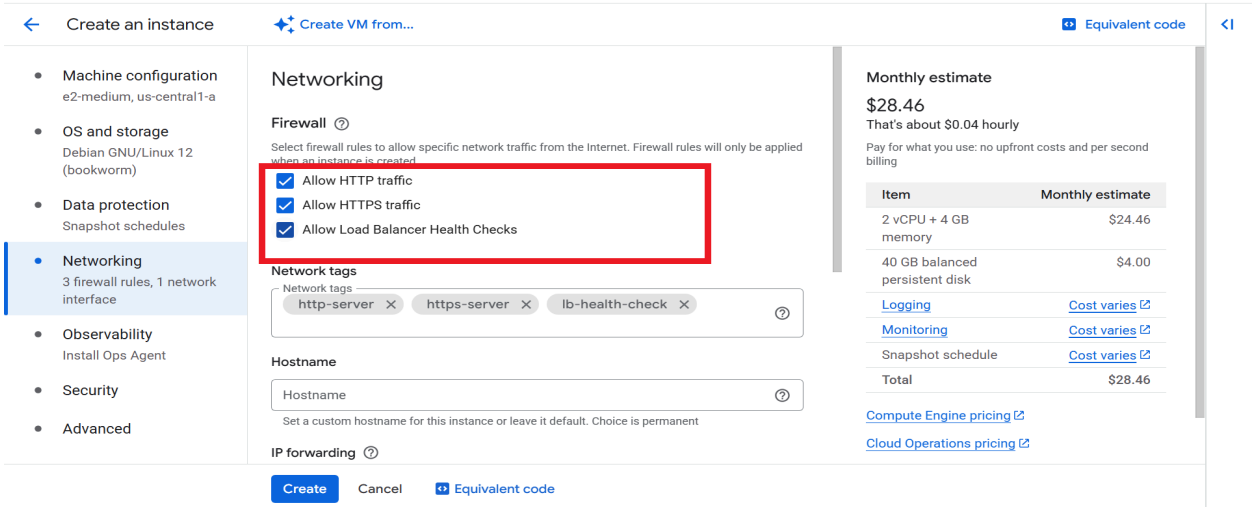
Default Os type is Debian
If you want to change OS Type than click on Change Button



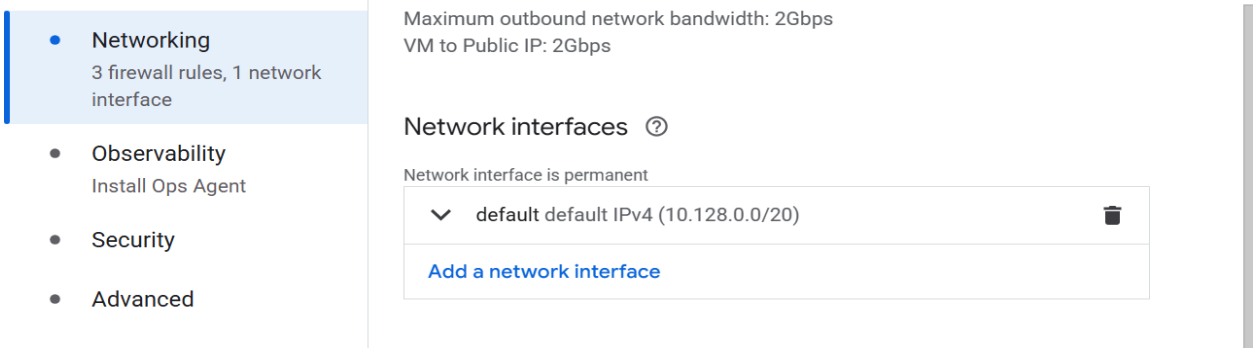
Select Desired Operation System
Select Operating System Version
Select the Disk Size and then click on select button to save setting



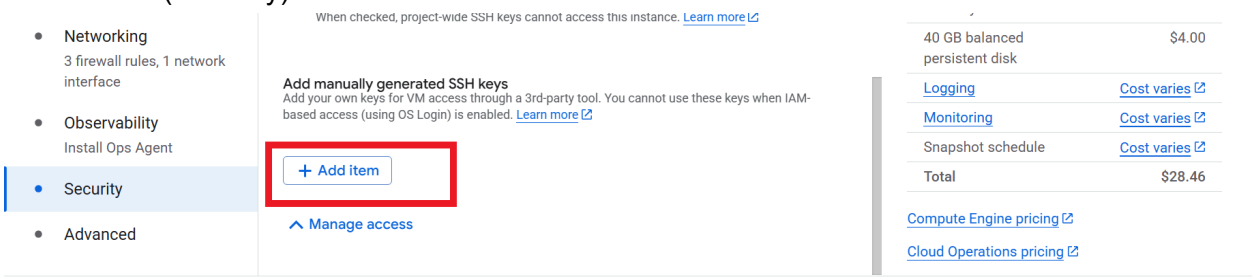
Allow firewall rules



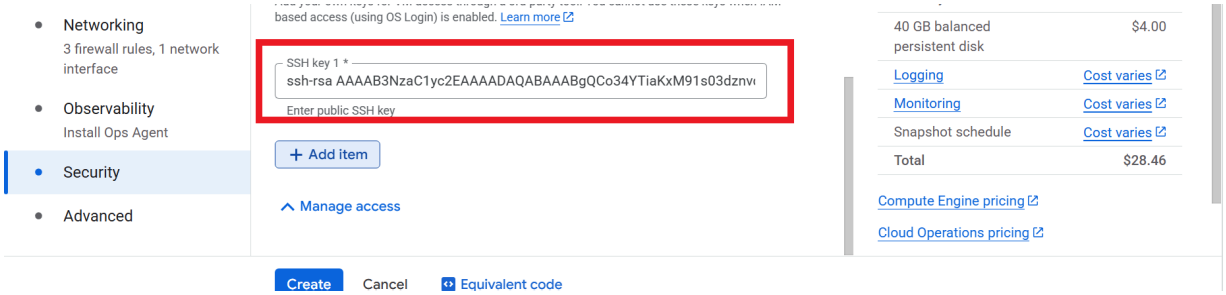
Use Default VPC Network:



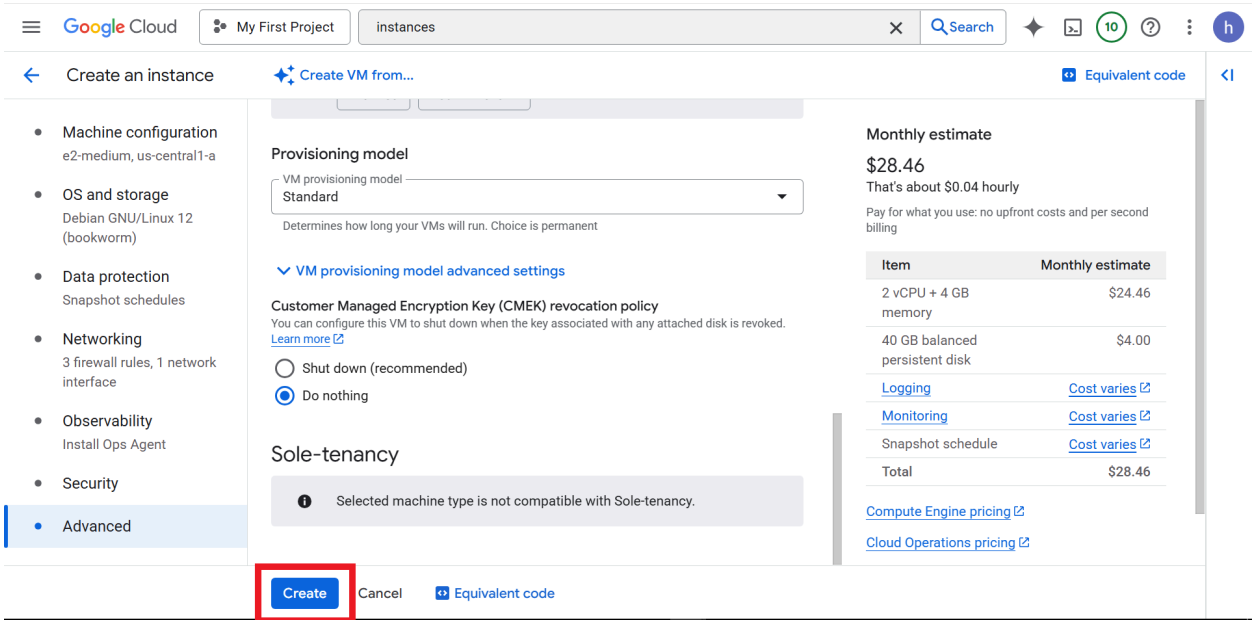
Add custom (ssh key)



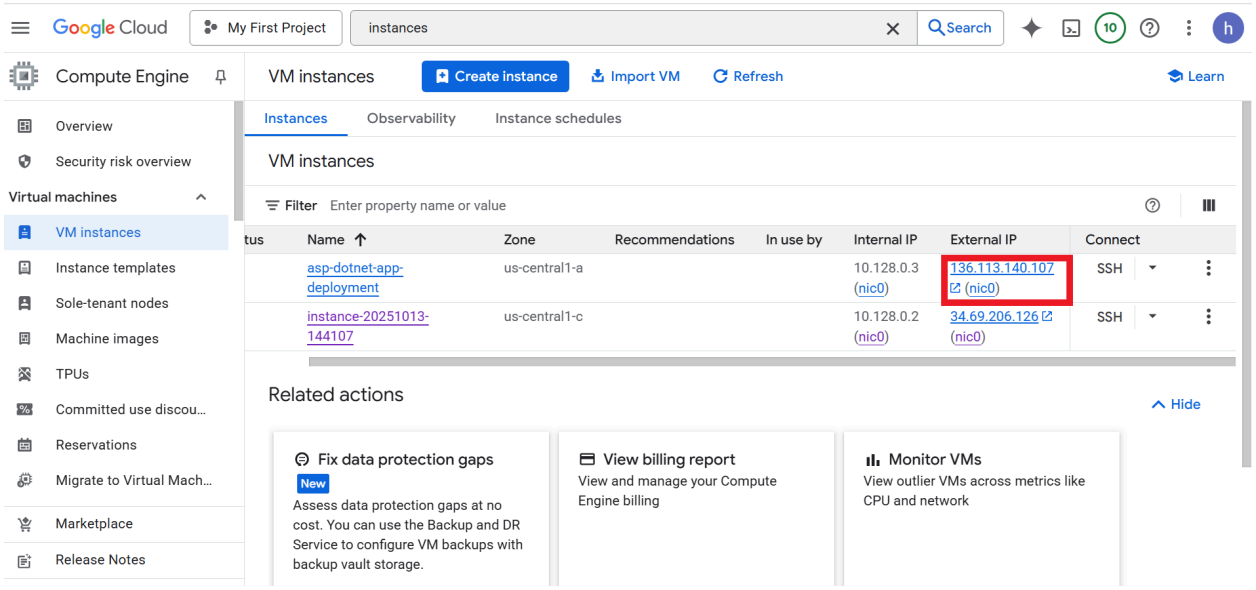
Copy your Pc key and paste in this field:



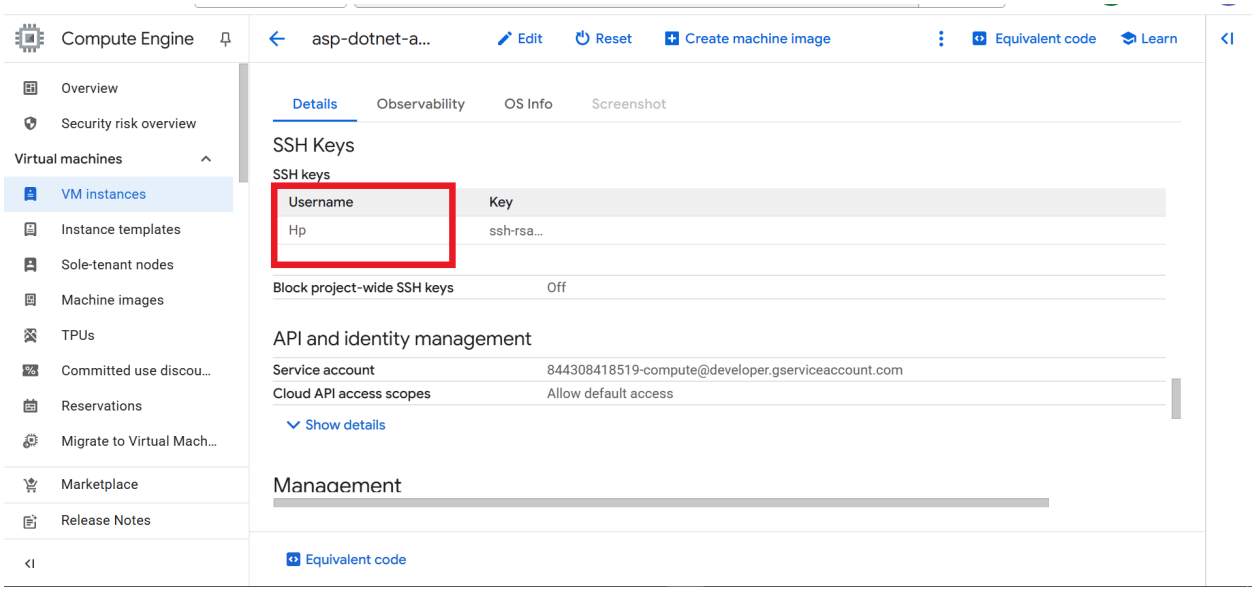
Click on the Create Button to create Vm



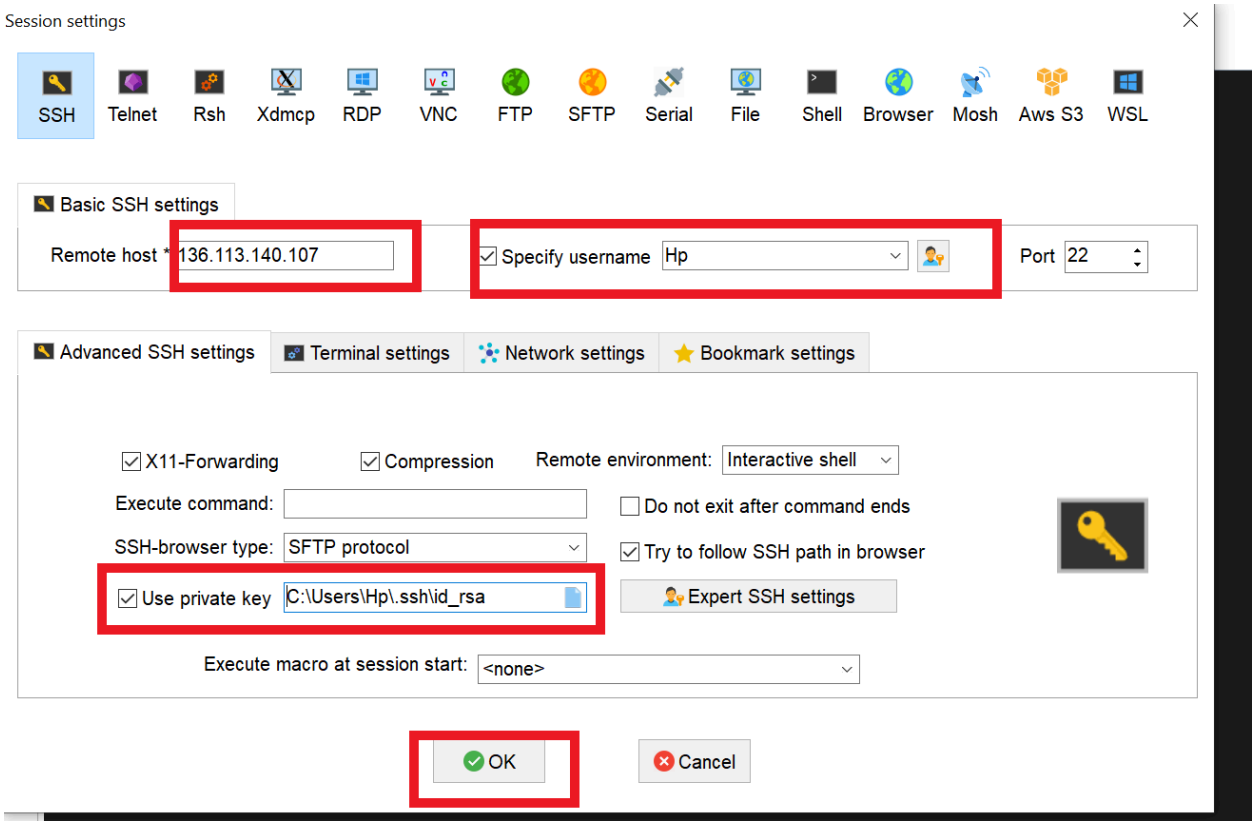
Access Vm:
Copy Public IP



Find Username:



Download Mobaxterm and
Add public Ip
Add username
Add your private key (because you have added your public key in custom ssh setting)
Click Ok to login



Step2: Download and Configure Microsoft SQL Server:

Goto this website [Website Link] and configure apt repository

Download the key

```
Hp@asp-dotnet-app-deployment:~$ curl https://packages.microsoft.com/keys/microsoft.asc | sudo tee /etc/apt/trusted.gpg.d/micr
osoft.asc
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100   975  100   975    0     0   8163      0 --:--:-- --:--:-- --:--:--  8193
-----BEGIN PGP PUBLIC KEY BLOCK-----
Version: BSN Pgp v1.1.0.0

mQENBFYxWIwBCADAKoZhZlJxGNGWzqV+1OG1xiQeoowKhssGAKvd+buXCGISZJwT
LXZqIcIiLP7pqdcZWtE9bSc7yBY2MalDp9Liu0KekywQ6VVX1T72NPf5Ev6x6DLV
7aVWsCzUAF+eb7DC9fPuFLEdxmOEYoPjzrQ7cCnSV4JQxAqhU4T6OjbvRazGl3ag
OeizPXmRljMtUUttHQZnRhtlzkmwIrUivbfFPD+fEoHJ1+uIdfOzZX8/oKHKLe2j
H632kvsNzJFlROVvGLYAk2WRcLu+RjjggixhwiB+Mu/A8Tf4V6b+YppS44q8EvVr
M+QvY7LNSOffSO6Slsy9oisGTdfE39nC7pVRABEBAAG0N01pY3Jvc29mdCAoUmVs
ZWFzZSBzaWduaW5nKSA8Z3Bnc2VjdXJpdHlAbWljcm9zb2Z0LmNvbT6JATQEEwEI
AB4FAlYxWIwCGwMGCwkIBwMCAxUIAwMWAgECHgECF4AACgkQ6z6Urb4SKc+P9gf/
diY2900wvWEgV7iMgrtGzx79W/PbwWiOkKoD9sdzhARXWiP8Q5teL/t5TUH6TZ3B
ENboDjwr705jLLPwuEDtPI9jz4kvdT86JwwG6N8gnWM8Ldi56SdJEtXrzwtlB/Fe
6tyfMT1E/PrJfgALUG9MWTIJkc0GhRJoyPpGZ6YWSLGXnk4c0HltYKDFR7q4wtI8
4cBu4mjZHZbxIO6r8Cci+xxuJkpOTIpr4pdpQKpECM6x5SaT2gVnscbN0PE19KK9
nPsBxyK4wW0AvAhed2qldBPTipgzPhqB2gu0jSryil95bKrSmlYJd1Y1XfNHno5D
xfn5JwgySBIdWWvtOI05gw==
=zPfd
-----END PGP PUBLIC KEY BLOCK-----
Hp@asp-dotnet-app-deployment:~$
```

Configure Repository

```
-----END PGP PUBLIC KEY BLOCK-----
Hp@asp-dotnet-app-deployment:~$ curl -fsSL https://packages.microsoft.com/config/ubuntu/22.04/mssql-server-2022.list | sudo t
ee /etc/apt/sources.list.d/mssql-server-2022.list
deb [arch=amd64,arm64,armhf] https://packages.microsoft.com/ubuntu/22.04/mssql-server-2022 jammy main
Hp@asp-dotnet-app-deployment:~$
```

Update Packages

```
Hp@asp-dotnet-app-deployment:~$ sudo apt-get update
Get:1 file:/etc/apt/mirrors/debian.list Mirrorlist [30 B]
Get:5 file:/etc/apt/mirrors/debian-security.list Mirrorlist [39 B]
Hit:7 https://packages.cloud.google.com/apt google-compute-engine-bookworm-stable InRelease
Hit:2 https://deb.debian.org/debian bookworm InRelease
Hit:8 https://packages.cloud.google.com/apt cloud-sdk-bookworm InRelease
Hit:3 https://deb.debian.org/debian bookworm-updates InRelease
Hit:4 https://deb.debian.org/debian bookworm-backports InRelease
Hit:9 https://packages.cloud.google.com/apt google-cloud-ops-agent-bookworm-2 InRelease
Hit:6 https://deb.debian.org/debian-security bookworm-security InRelease
Get:10 https://packages.microsoft.com/ubuntu/22.04/mssql-server-2022 jammy InRelease [3624 B]
Get:11 https://packages.microsoft.com/ubuntu/22.04/mssql-server-2022 jammy/main amd64 Packages [8492 B]
Fetched 12.1 kB in 1s (10.8 kB/s)
Reading package lists... Done
Hp@asp-dotnet-app-deployment:~$
```

Install mssql server:

```
Hp@asp-dotnet-app-deployment:~$ sudo apt-get install -y mssql-server
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  gawk gdb libatomic1 libbabeltrace1 libboost-regex1.74.0 libc++1 libc++1-14 libc++abi1-14 libc6-dbg libdebuginfod-common
  libdebuginfod1 libdw1 libipt2 libmpfr6 libnuma1 libpython3.11 libsasl2-modules-gssapi-mit libsigsegv2
  libsource-highlight-common libsource-highlight4v5 libsss-nss-idmap0 libunwind-14 libunwind8 lsof
Suggested packages:
  gawk-doc gdb-doc gdbserver clang
The following NEW packages will be installed:
  gawk gdb libatomic1 libbabeltrace1 libboost-regex1.74.0 libc++1 libc++1-14 libc++abi1-14 libc6-dbg libdebuginfod-common
  libdebuginfod1 libdw1 libipt2 libmpfr6 libnuma1 libpython3.11 libsasl2-modules-gssapi-mit libsigsegv2
  libsource-highlight-common libsource-highlight4v5 libsss-nss-idmap0 libunwind-14 libunwind8 lsof mssql-server
0 upgraded, 25 newly installed, 0 to remove and 7 not upgraded.
Need to get 303 MB of archives.
After this operation, 1387 MB of additional disk space will be used.
Get:1 file:/etc/apt/mirrors/debian.list Mirrorlist [30 B]
Get:2 https://deb.debian.org/debian bookworm/main amd64 libmpfr6 amd64 4.2.0-1 [701 kB]
Get:3 https://deb.debian.org/debian bookworm/main amd64 libsigsegv2 amd64 2.14-1 [37.2 kB]
Get:4 https://deb.debian.org/debian bookworm/main amd64 gawk amd64 1:5.2.1-2 [673 kB]
Get:5 https://deb.debian.org/debian bookworm/main amd64 libdebuginfod-common all 0.188-2.1 [21.5 kB]
Get:6 https://deb.debian.org/debian bookworm/main amd64 lsof amd64 4.95.0-1 [318 kB]
Get:7 https://deb.debian.org/debian bookworm/main amd64 libdw1 amd64 0.188-2.1 [235 kB]
Get:8 https://deb.debian.org/debian bookworm/main amd64 libbabeltrace1 amd64 1.5.11-1+b2 [172 kB]
Get:9 https://deb.debian.org/debian bookworm/main amd64 libdebuginfod1 amd64 0.188-2.1 [27.3 kB]
Get:10 https://deb.debian.org/debian bookworm/main amd64 libipt2 amd64 2.0.5-1 [43.9 kB]
Get:11 https://deb.debian.org/debian bookworm/main amd64 libpython3.11 amd64 3.11.2-6+deb12u6 [1987 kB]
Get:12 https://deb.debian.org/debian bookworm/main amd64 libsource-highlight-common all 3.1.9-4.2 [77.4 kB]
Get:13 https://deb.debian.org/debian bookworm/main amd64 libboost-regex1.74.0 amd64 1.74.0+ds1-21 [487 kB]
Get:14 https://deb.debian.org/debian bookworm/main amd64 libsource-highlight4v5 amd64 3.1.9-4.2+b3 [257 kB]
Get:15 https://deb.debian.org/debian bookworm/main amd64 gdb amd64 13.1-3 [3962 kB]
Get:16 https://deb.debian.org/debian bookworm/main amd64 libatomic1 amd64 12.2.0-14+deb12u1 [9376 B]
Get:17 https://deb.debian.org/debian bookworm/main amd64 libunwind-14 amd64 1:14.0.6-12 [44.4 kB]
```

Configure mssql:

```
Hp@asp-dotnet-app-deployment:~$ sudo /opt/mssql/bin/mssql-conf setup
Choose an edition of SQL Server:
  1) Evaluation (free, no production use rights, 180-day limit)
  2) Developer (free, no production use rights)
  3) Express (free)
  4) Web (PAID)
  5) Standard (PAID)
  6) Enterprise (PAID) - CPU core utilization restricted to 20 physical/40 hyperthreaded
  7) Enterprise Core (PAID) - CPU core utilization up to Operating System Maximum
  8) I bought a license through a retail sales channel and have a product key to enter.
  9) Standard (Billed through Azure) - Use pay-as-you-go billing through Azure.
 10) Enterprise Core (Billed through Azure) - Use pay-as-you-go billing through Azure.

Details about editions can be found at
```

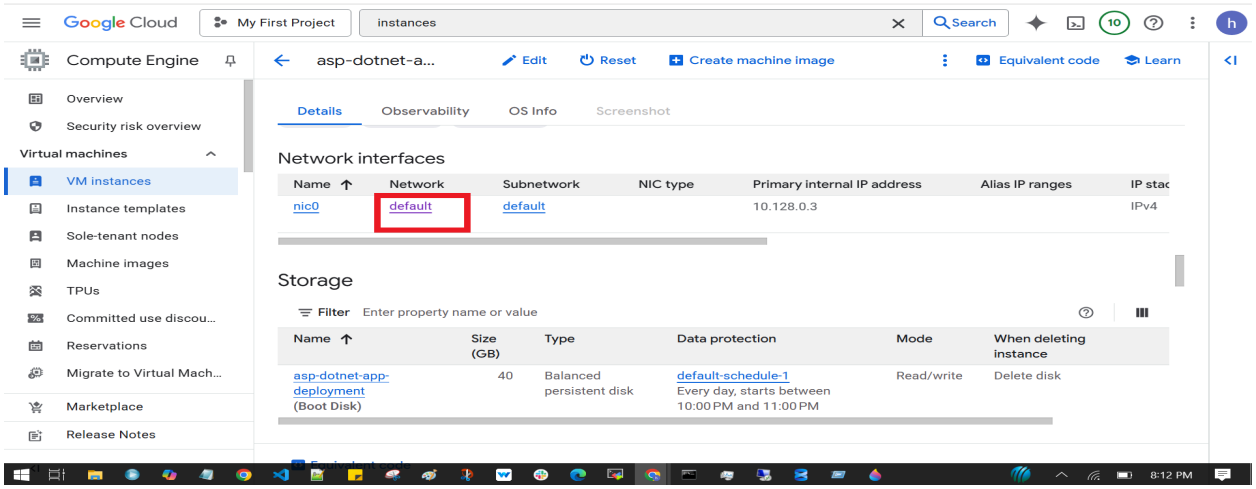
Configure License and Super User Password:

```
Enter your edition(1-10): 3
The license terms for this product can be found in
/usr/share/doc/mssql-server or downloaded from: https://aka.ms/useterms

The privacy statement can be viewed at:
https://go.microsoft.com/fwlink/?LinkId=853010&clcid=0x409

Do you accept the license terms? [Yes/No]:Yes

Enter the SQL Server system administrator password:
Confirm the SQL Server system administrator password:
Configuring SQL Server...

The licensing PID was successfully processed. The new edition is [Express Edition].
ForceFlush is enabled for this instance.
ForceFlush feature is enabled for log durability.
Created symlink /etc/systemd/system/multi-user.target.wants/mssql-server.service → /lib/systemd/system/mssql-server.service.
Setup has completed successfully. SQL Server is now starting.
Hp@asp-dotnet-app-deployment:~$
```

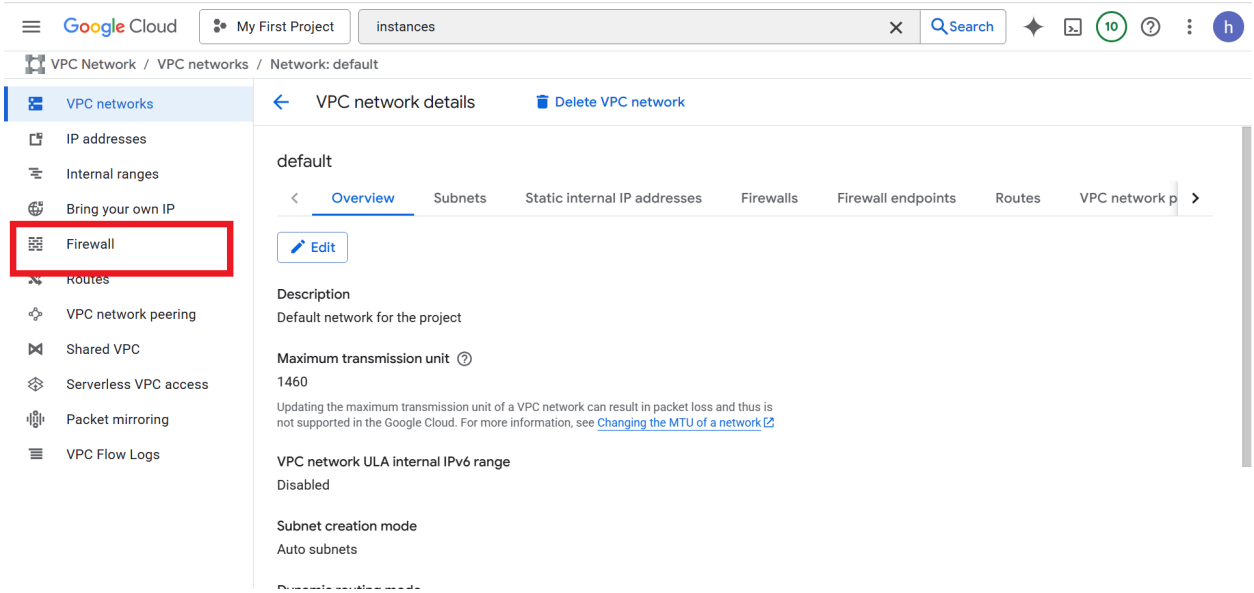
Check mssql status:

```
Hp@asp-dotnet-app-deployment:~$ systemctl status mssql-server --no-pager
● mssql-server.service - Microsoft SQL Server Database Engine
     Loaded: loaded (/lib/systemd/system/mssql-server.service; enabled; preset: enabled)
     Active: active (running) since Tue 2025-10-14 15:08:20 UTC; 2min 33s ago
       Docs: https://docs.microsoft.com/en-us/sql/linux
   Main PID: 8531 (sqlservr)
      Tasks: 142
     Memory: 640.9M
        CPU: 14.992s
     CGroup: /system.slice/mssql-server.service
             ├─8531 /opt/mssql/bin/sqlservr
             └─8550 /opt/mssql/bin/sqlservr

Oct 14 15:08:28 asp-dotnet-app-deployment sqlservr[8550]: [104B blob data]
Oct 14 15:08:28 asp-dotnet-app-deployment sqlservr[8550]: [97B blob data]
Oct 14 15:08:28 asp-dotnet-app-deployment sqlservr[8550]: [97B blob data]
Oct 14 15:08:28 asp-dotnet-app-deployment sqlservr[8550]: [318B blob data]
Oct 14 15:08:28 asp-dotnet-app-deployment sqlservr[8550]: [95B blob data]
Oct 14 15:08:28 asp-dotnet-app-deployment sqlservr[8550]: [101B blob data]
Oct 14 15:08:28 asp-dotnet-app-deployment sqlservr[8550]: [124B blob data]
Oct 14 15:08:28 asp-dotnet-app-deployment sqlservr[8550]: [145B blob data]
Oct 14 15:08:30 asp-dotnet-app-deployment sqlservr[8550]: [73B blob data]
Oct 14 15:08:30 asp-dotnet-app-deployment sqlservr[8550]: [81B blob data]
Hp@asp-dotnet-app-deployment:~$
```

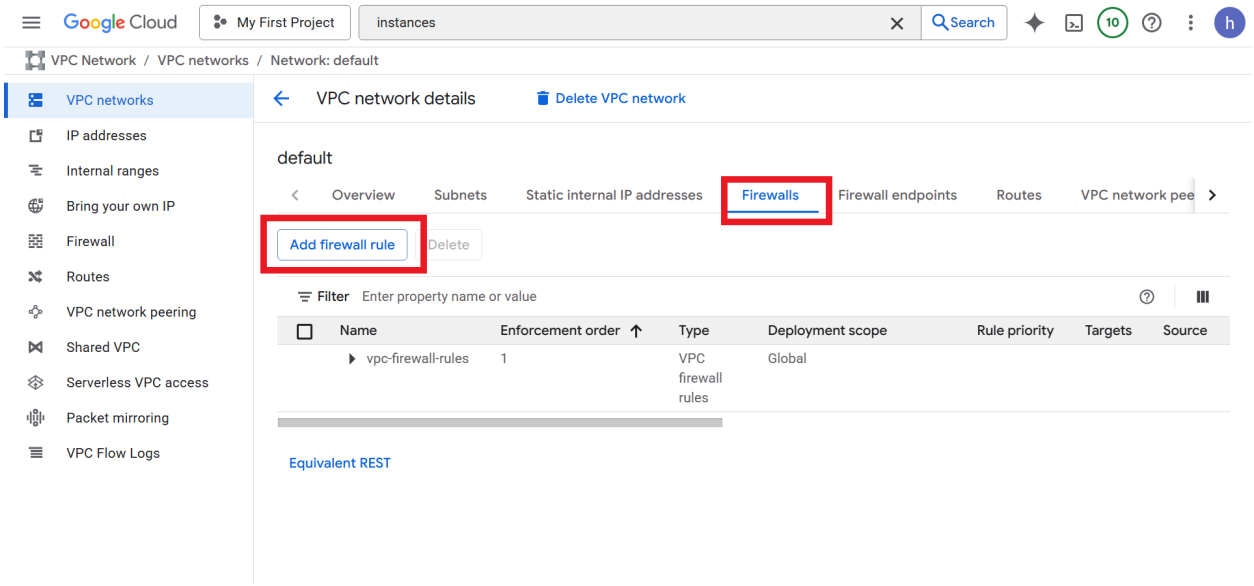
Enable Port In Firewall:
Select default Network



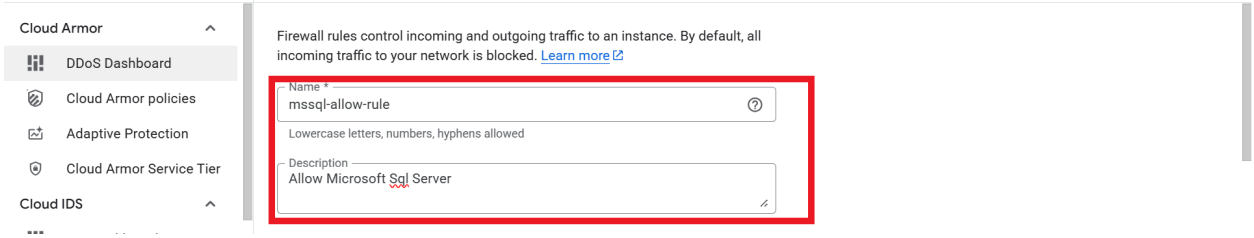
Click on Firewall



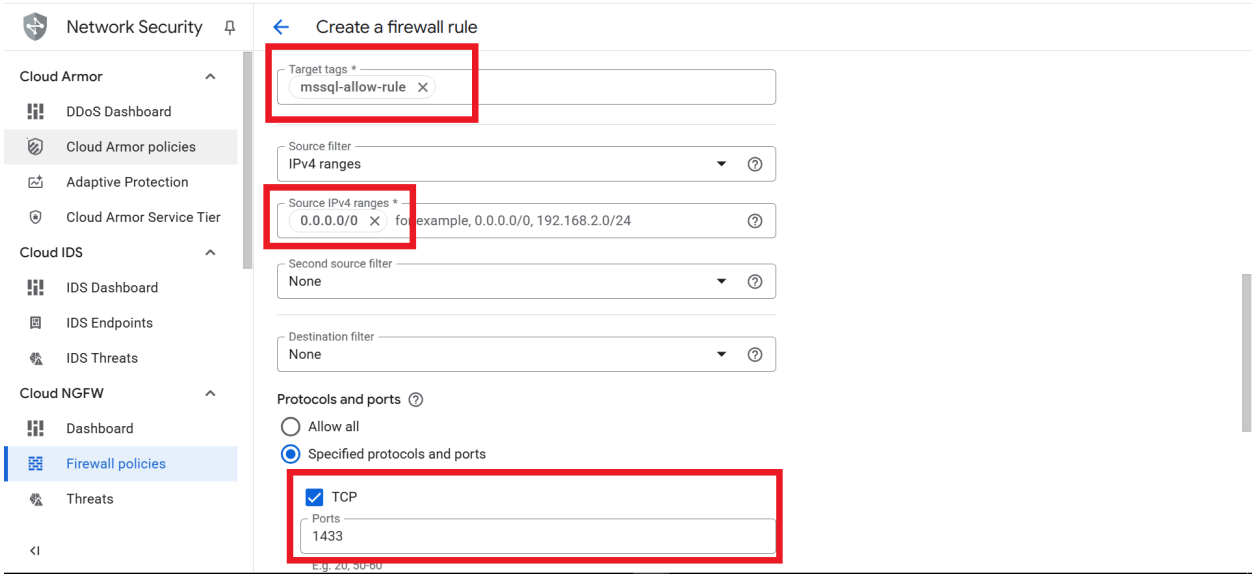
Select Add Firewall rule



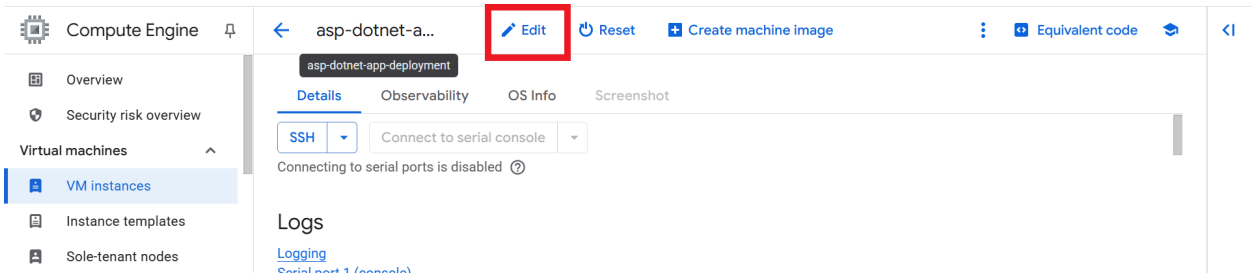
Add name and description for rule



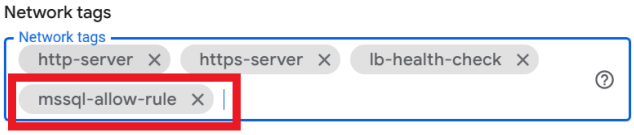
Add Tag , Ip range and Port and then click on create button



Edit the Instance setting

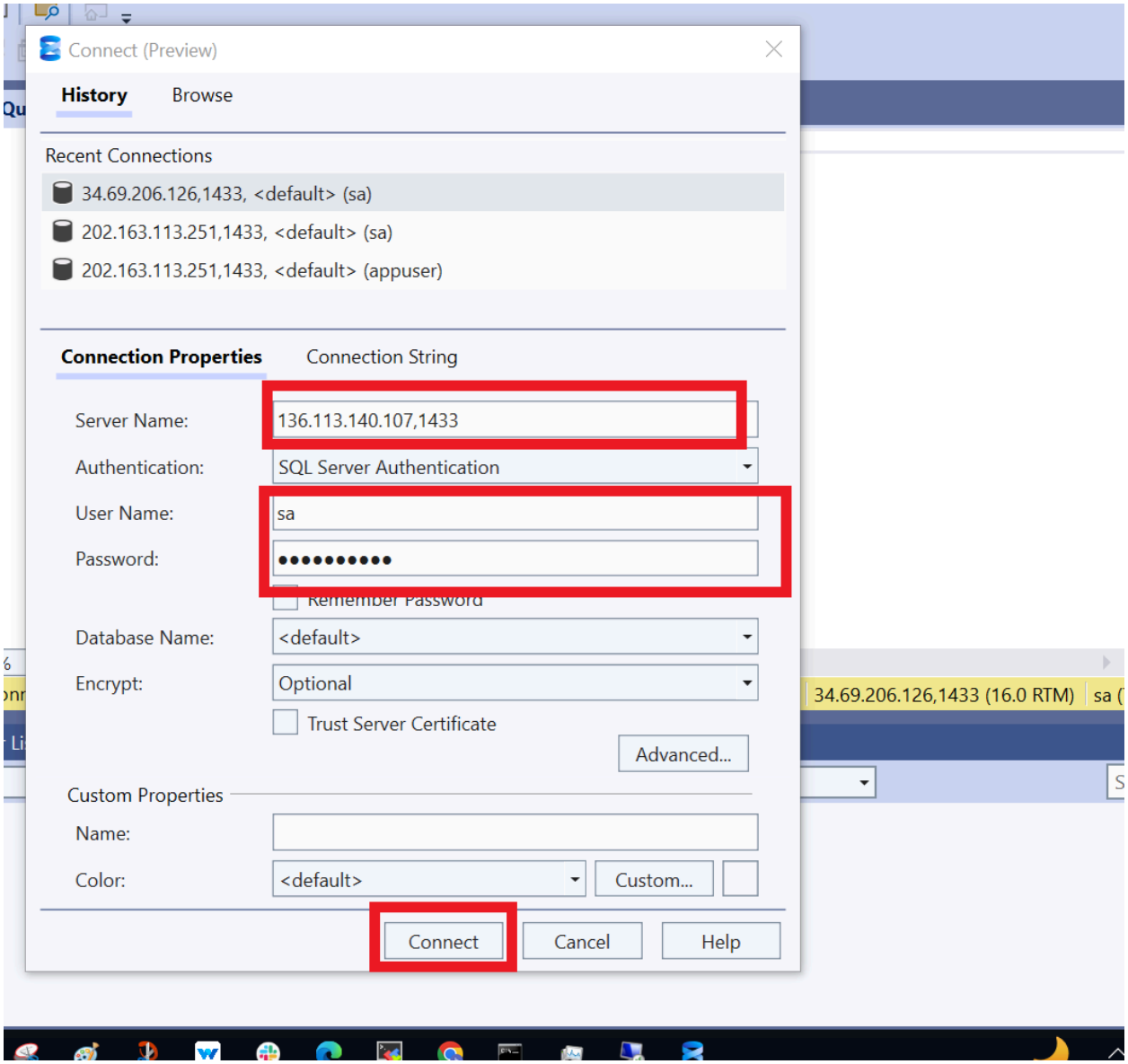


Add rule in Network Tags:



Step 3:
Download SQL Server Management Studio
Link on this link to download 2021 version
[SQL Server Management Studio]

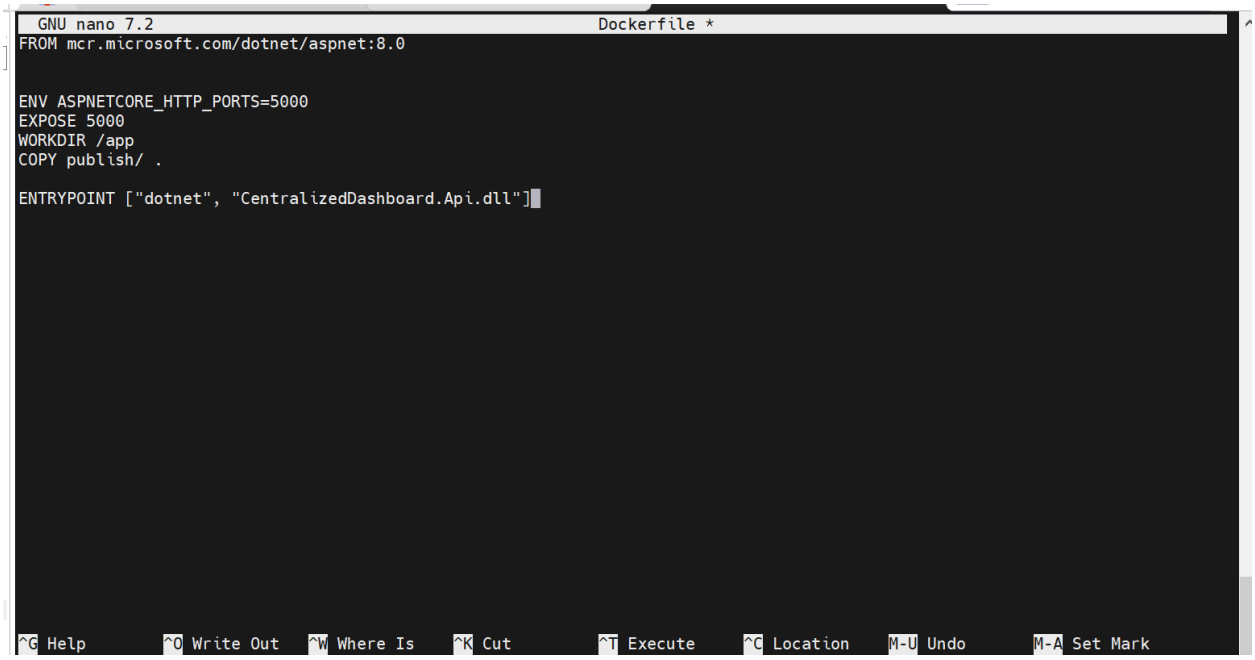
Open SQL Server Management Studio and configure connection like this:
Add public ip, username and password



Step 4: Connect Database To App:

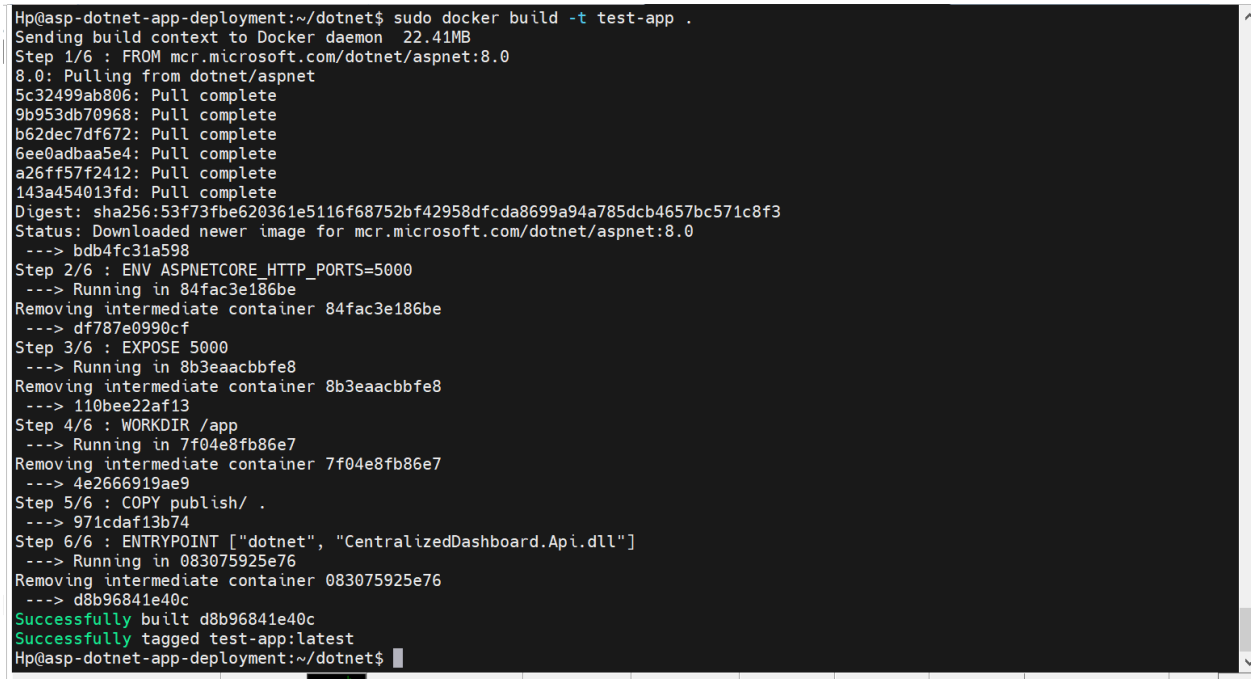
Server=136.113.140.107,1433;Database=CentralizedDashboardDb; User Id=sa;Password=potter@123;Encrypt=False;TrustServerCertificate=True;

Step 5: Create Dockerfile for App (I've publish folder and I only need dotnet runtime)
Sudo nano Dockerfile:



Place it with the Publish folder

Create Test Image:



Run container:

```
Hp@asp-dotnet-app-deployment:~/dotnet$ sudo docker run -dp 80:5000 test-app
8aa52697777f467f3b8fda5323680b350e694d23ddd1fda8887d5129cd4baa8c
```

Test the Endpoints: