

1. Create a VPC n/w to communicate b/w 2VM instances present in different n/ws.

Exp:2 VPC+firewalls->2 VMs->Reserve External IP->VPN->Go to VM->SSH->ping 'ip'

The screenshot shows two screenshots of the Google Cloud Platform interface related to VPC networks.

Screenshot 1: Create a VPC network

- The top part shows the "Create a VPC network" page. On the left, a sidebar lists options like "VPC networks", "External IP addresses", "Bring your own IP", "Firewall", "Routes", "VPC network peering", "Shared VPC", "Serverless VPC access", and "Packet mirroring".
- The main form has fields for "Name" (containing "vpc") and "Description". Below these, under "Subnets", there's a note about creating private cloud topology, a "Subnet creation mode" section with "Custom" selected, and a "New subnet" button.

Screenshot 2: VPC networks - VPC network

- This screenshot shows the list of existing VPC networks.
- The table lists various regions and their default subnets, along with their ranges and status (Off).
- Specific rows shown include:
 - us-west3: default, 10.180.0.0/20, 10.180.0.1
 - us-west4: default, 10.182.0.0/20, 10.182.0.1
 - asia-southeast2: default, 10.184.0.0/20, 10.184.0.1
 - europe-central2: default, 10.186.0.0/20, 10.186.0.1
 - northamerica-northeast2: default, 10.188.0.0/20, 10.188.0.1
 - asia-south2: default, 10.190.0.0/20, 10.190.0.1
 - australia-southeast2: default, 10.192.0.0/20, 10.192.0.1
 - southamerica-west1: default, 10.194.0.0/20, 10.194.0.1
 - vpc1: 1, 1460, Custom, 0, Off
 - asia-south2: v1, 10.4.0.0/24, 10.4.0.1, 0, Off
 - vpc2: 1, 1460, Custom, 0, Off
 - us-west2: v2, 10.5.0.0/24, 10.5.0.1, 0, Off

Subscription Details | Nuvepro

VM instances - Compute Engine

Build and deploy a Python service

Build and deploy a Python service

Paused

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Google Cloud Platform tarkshyas-1636464438483

vm

Compute Engine

VM instances CREATE INSTANCE IMPORT VM OPERATIONS HELP ASSISTANT HIDE INFO PANEL LEARN

Virtual machines

- VM instances
- Instance templates
- Sole-tenant nodes
- Machine images
- TPUs
- Committed use discounts
- Migrate for Compute Eng...
- Marketplace
- Release Notes

INSTANCES INSTANCE SCHEDULE

VM instances are highly configurable virtual machines for running workloads on Google infrastructure. [Learn more](#)

Filter Enter property name or value

Zone	Recommendations	In use by	Internal IP	External IP	Connect
us-west2-a			10.168.0.9 (nico)	35.236.119.190	SSH
asia-south2-a			10.190.0.3 (nico)	34.131.17.242	SSH

Select an instance

PERMISSIONS LABELS MONITORING

Please select at least one resource.

tsgcp_user04@instance-1: ~ - Google Chrome

ssh.cloud.google.com/projects/tarkshyas-1636464438483/zones/us-west2-a/instances/instance-1?authuser=0&hl=en_US&projectNum...
Connected, host fingerprint: ssh-rsa 0 2A:34:80:BD:50:E6:8C:D4:IE:07:EB:E6:54:50
mac:21:D1:53:F4:0F:BC:29:85:C4:95:B8:BF:C9:FF:AB:6A:AB
Linux instance-1 4.19.0-18-cloud-amd64 #1 SMP Debian 4.19.208-1 (2021-09-29) 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.
tsgcp_user04@instance-1:~\$ ping
Usage: ping [-abbBdDfLnOqrRvV64] [-c count] [-i interval] [-I interface]
[-m mark] [-M pmtdisc option] [-l preload] [-p pattern] [-Q tos]
[-s packetsize] [-S sndbuf] [-t ttl] [-T timestamp_option]
[-w deadline] [-W timeout] [hop1 ...] destination
Usage: ping -6 [-aAbBdDfLnOqrRvUv] [-c count] [-i interval] [-I interface]
[-l preload] [-m mark] [-M pmtdisc option]
[-N nodeinfo option] [-p pattern] [-Q tcclass] [-s packetsize]
[-S sndbuf] [-t ttl] [-T timestamp_option] [-w deadline]
[-W timeout] destination
tsgcp_user04@instance-1:~\$

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OPTIONS HELP ASSISTANT HIDE INFO PANEL LEARN

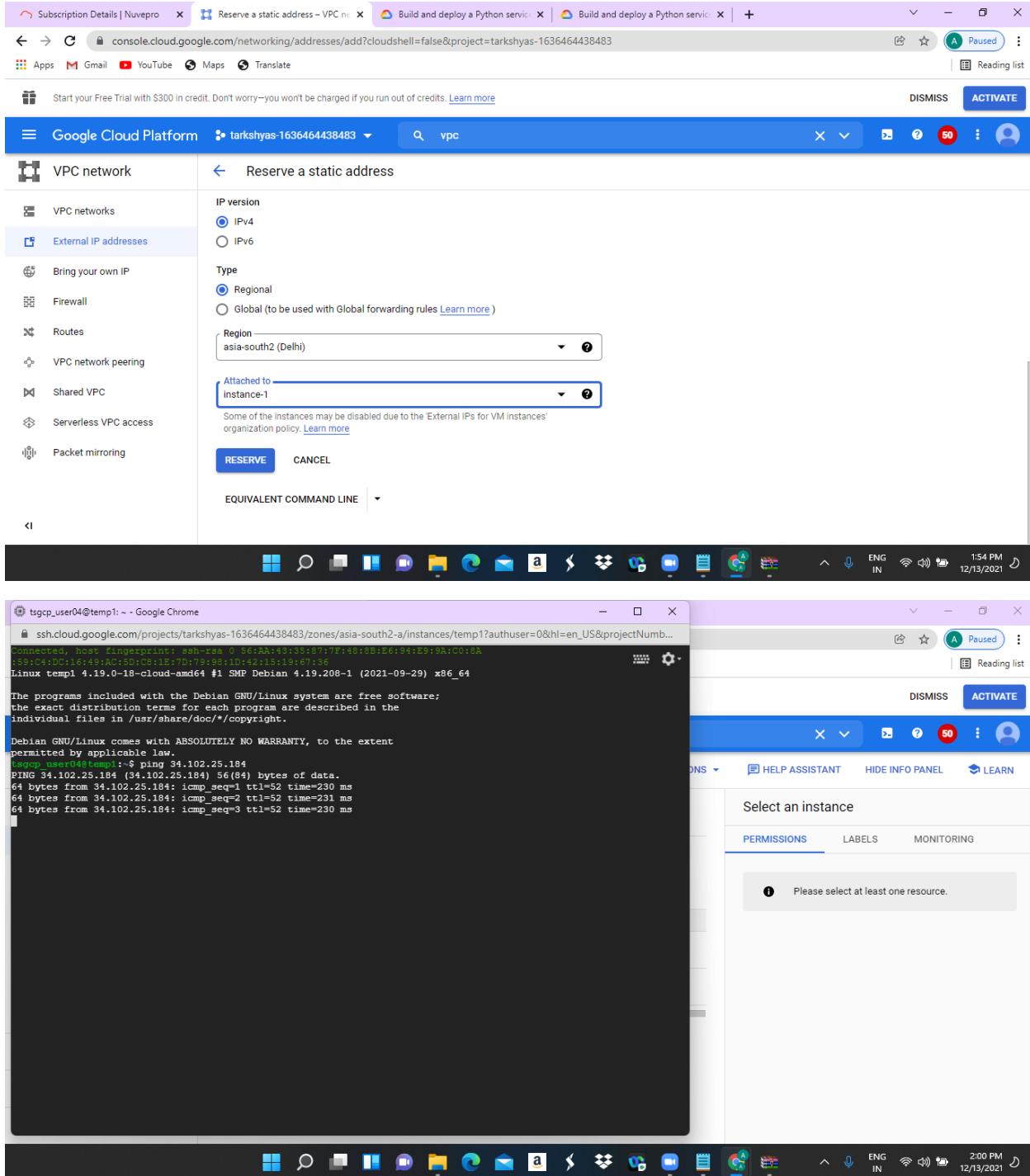
Select an instance

PERMISSIONS LABELS MONITORING

Please select at least one resource.

1:49 PM 12/13/2021

1:50 PM 12/13/2021

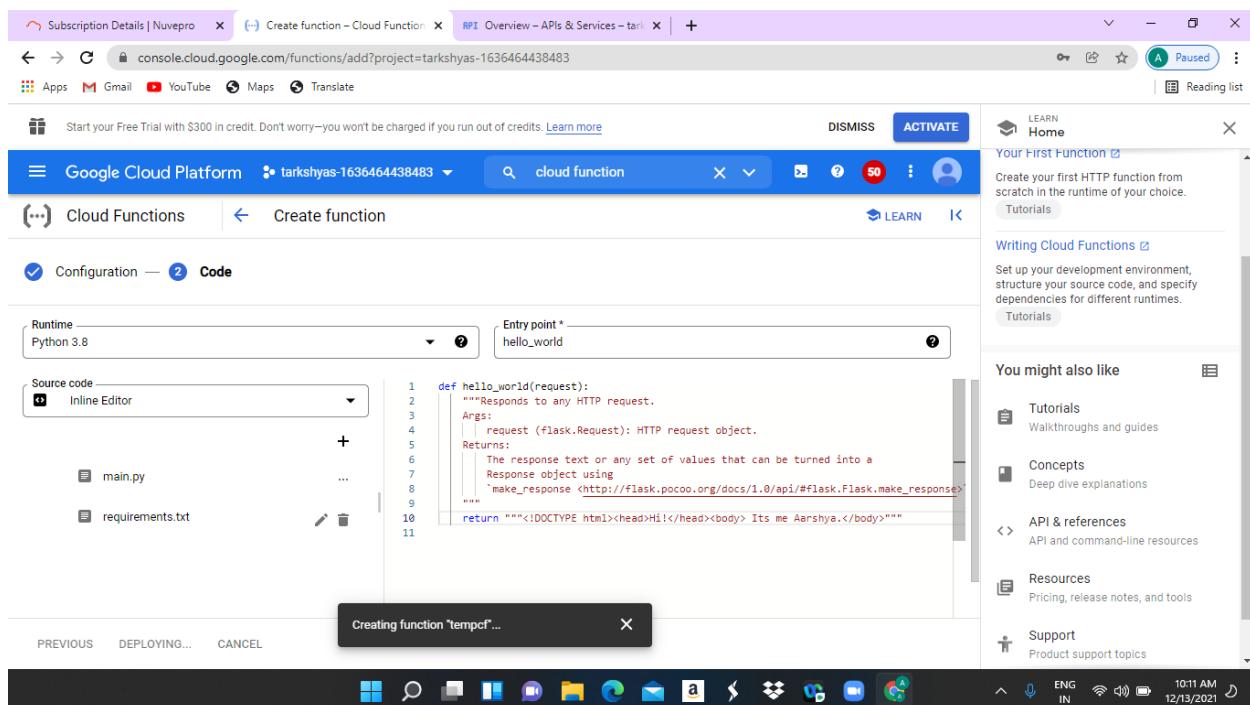
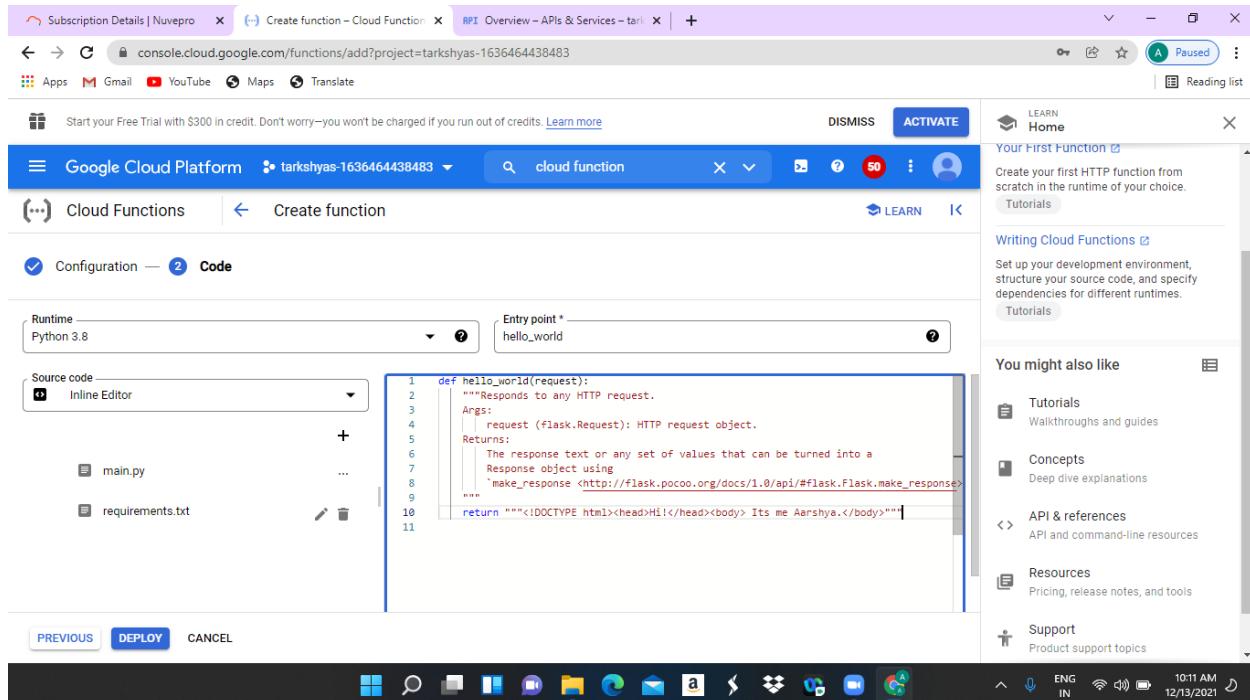


2. Create a cloud function to host a http function.

Exp: Create a cloud function as http->select programming lang->say python, the code could be
 Return """<!DOCTYPE html><head>HELLOO</head><body>Its me Aarshya</body>"""->
 deploy->trigger->click link.

The screenshot shows the Google Cloud Functions homepage. At the top, there are three tabs: "Subscription Details | Nuvepro", "Cloud Functions - tarkshyas-163...", and "Email - Aarshya Rezel(UST,IN) - c...". The main content area has a banner for a free trial with \$300 credit. Below it, there's a search bar with "cloud function" and a "CREATE FUNCTION" button. To the right, there's a sidebar titled "LEARN Home" with sections for "Recommended for you" (Deploying Cloud Functions, Tutorials), "Troubleshooting" (Troubleshoot issues with Cloud Functions, Support), "Monitoring" (Monitor your Cloud Functions, Tutorials), and "You might also like" (Tutorials, Walkthroughs and guides; Concepts, Deep dive explanations; API & references, API and command-line resources; Resources, Pricing, release notes, and tools). The bottom of the screen shows a Windows taskbar with various icons.

The screenshot shows the "Create function" configuration page. The URL in the address bar is "console.cloud.google.com/functions/add?project=tarkshyas-1636464438483". The main form has tabs for "Configuration" (selected) and "Code". Under "Configuration", there's a "Basics" section with "Function name" set to "tempcf" and "Region" set to "us-central1". Below that is a "Trigger" section with "HTTP" selected. Under "HTTP", there's a "Trigger URL" field containing "https://us-central1-tarkshyas-1636464438483.cloudfunctions.net/tempcf". At the bottom are "NEXT" and "CANCEL" buttons. To the right, there's a sidebar with "LEARN Home" sections for "Your First Function" (Create your first HTTP function from scratch in the runtime of your choice, Tutorials) and "Writing Cloud Functions" (Set up your development environment, structure your source code, and specify dependencies for different runtimes, Tutorials). There's also a "You might also like" sidebar with links to Tutorials, Concepts, API & references, and Resources. The bottom of the screen shows a Windows taskbar.

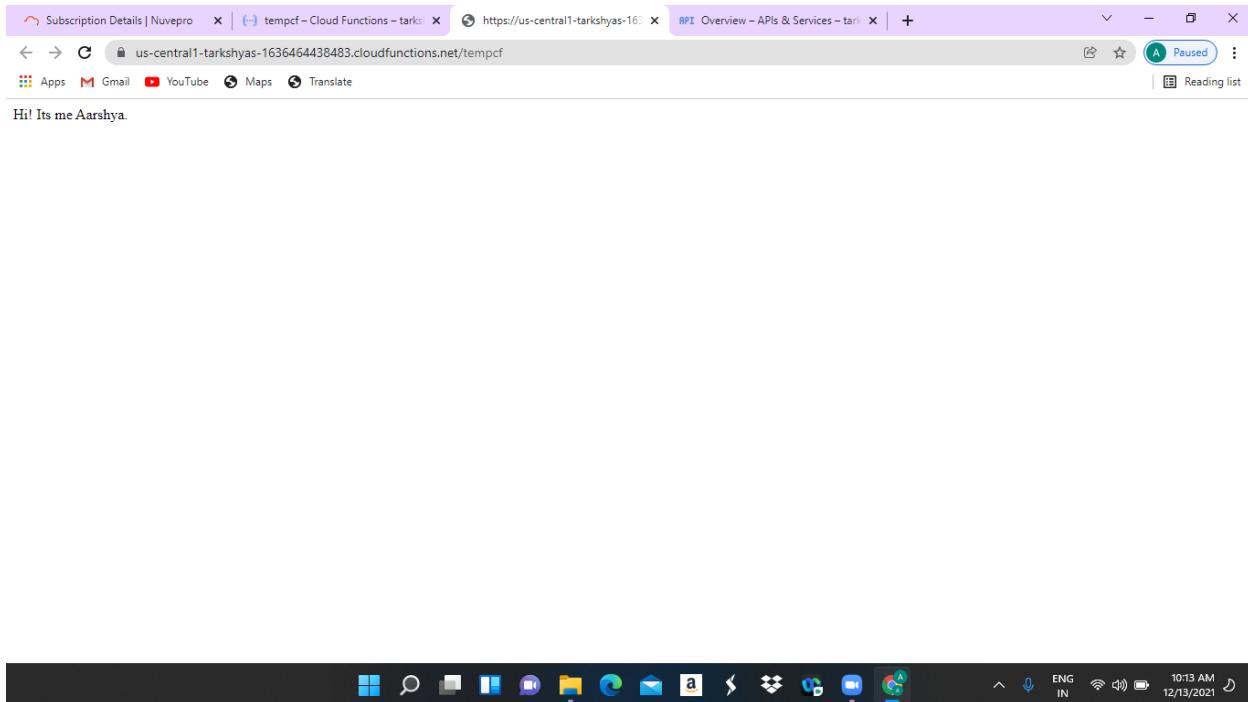


The screenshot shows the Google Cloud Platform Functions list page. At the top, there are three tabs: "Subscription Details | Nuvepro", "Functions - Cloud Functions - tarkshyas-1636464438483", and "API Overview - APIs & Services - tarkshyas-1636464438483". The main content area displays a table of functions. One function, "temppcf", is listed with the following details:

Name	Region	Trigger	Runtime	Memory allocated	Executed function	Last deployed	Authentication
temppcf	us-central1	HTTP	Python 3.8	256 MB	hello_world	Dec 13, 2021, 10:12:50 AM	Allow unauthenticated

On the right side, there is a sidebar titled "Recommended for you" which includes sections for "Deploying Cloud Functions", "Troubleshooting", "Monitoring", and "You might also like". The status bar at the bottom shows "10:12 AM 12/13/2021".

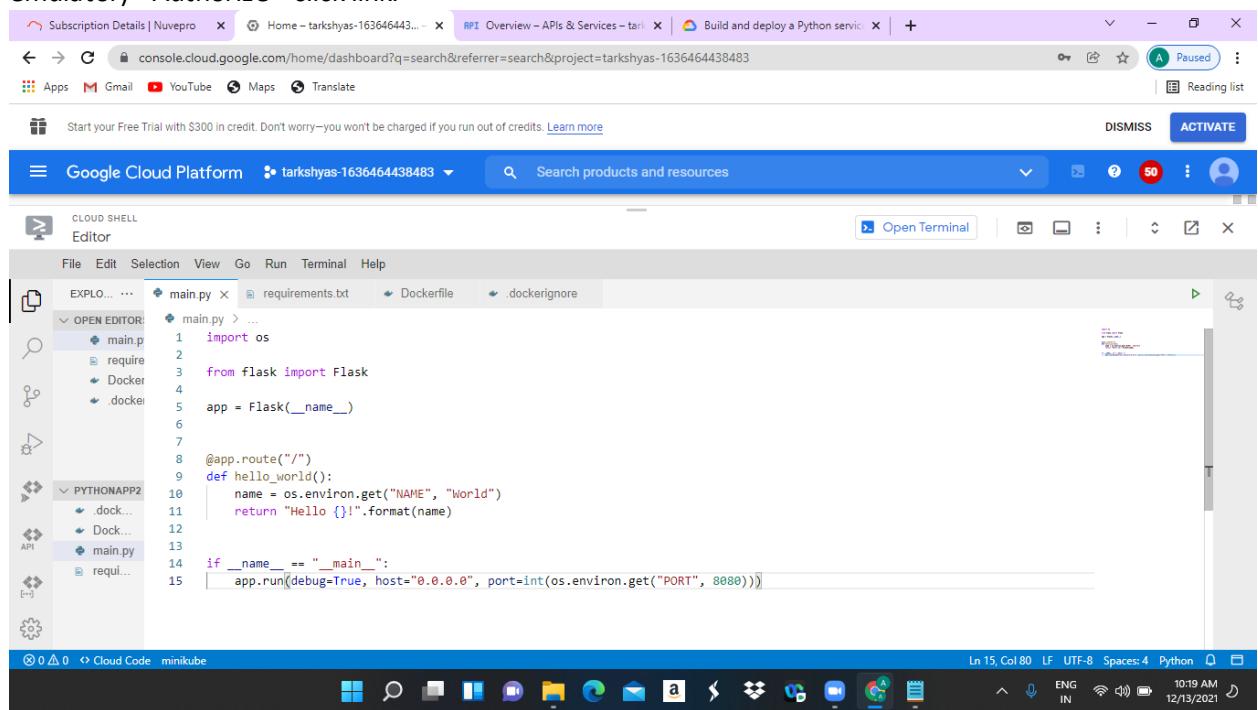
The screenshot shows the Google Cloud Platform Function details page for "temppcf". The top navigation bar is identical to the previous screenshot. The main content area shows the "Function details" section for "temppcf". The "TRIGGER" tab is selected, showing an "HTTP" trigger configuration. The "Trigger URL" is listed as <https://us-central1-tarkshyas-1636464438483.cloudfunctions.net/temppcf>. Other tabs include "METRICS", "DETAILS", "SOURCE", "VARIABLES", "PERMISSIONS", "LOGS", and "TESTING". On the right side, there is a sidebar titled "Recommended for you" with sections for "Monitoring", "Logging", "Test basics", and "You might also like". The status bar at the bottom shows "10:13 AM 12/13/2021".



3. Cloud run.

1. Python Service

Cloud Shell Editor->New Folder(pythonapp)->4 files(main.py, requirements.txt, Dockerfile, .dockerignore)->cloud code(Run on cloud run emulator)->Authorize->click link.



The screenshot shows the Google Cloud Platform Cloud Shell interface. The current directory is `PYTHONAPP2`. The `requirements.txt` file contains the following dependencies:

```
Flask==2.0.2
gunicorn==20.1.0
```

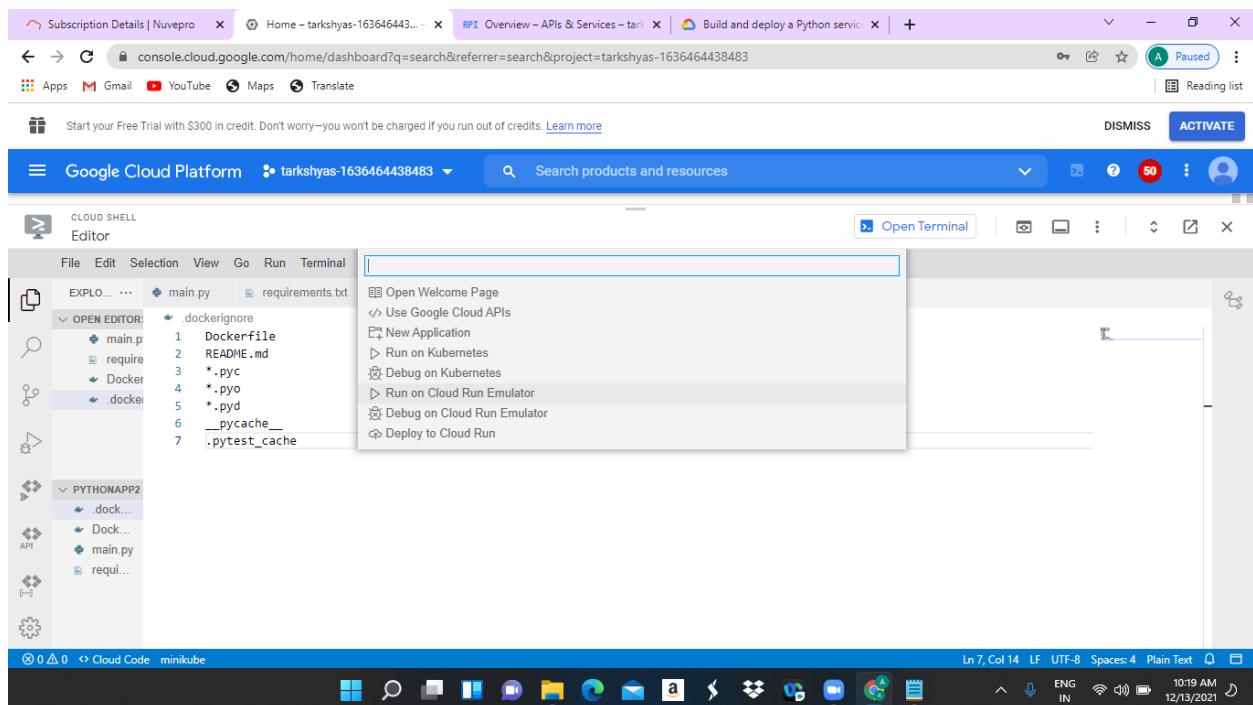
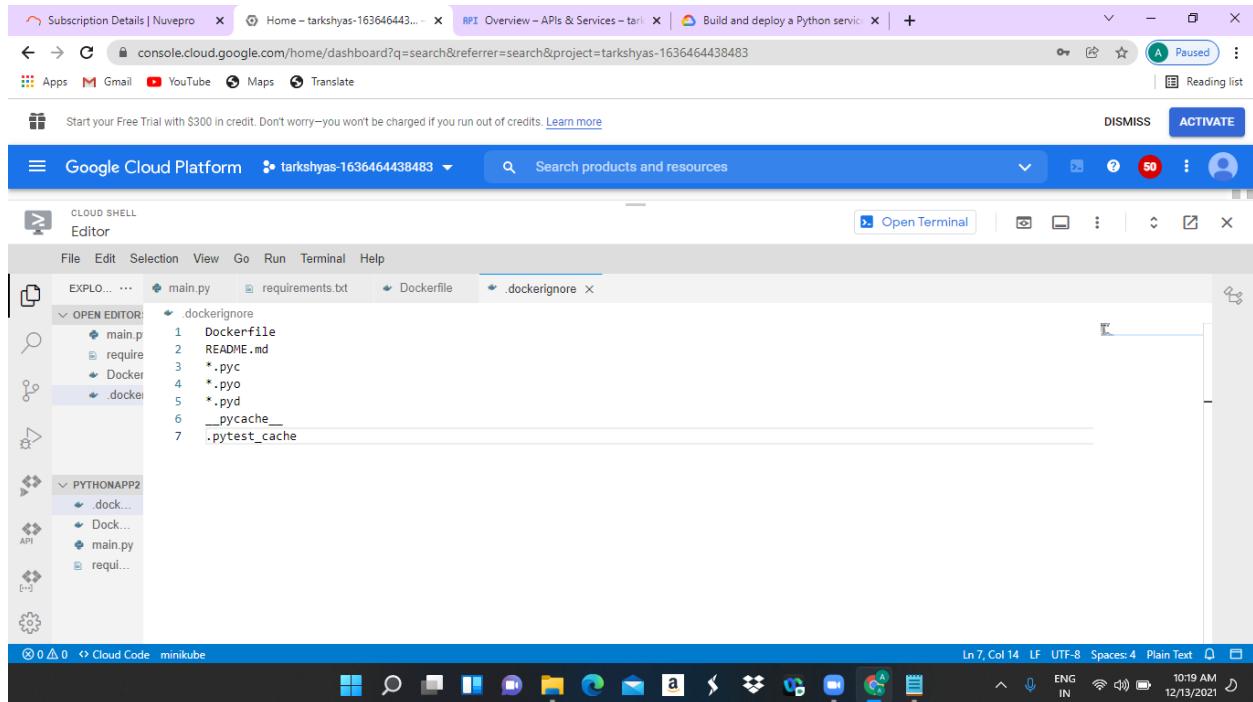
The screenshot shows the Google Cloud Platform Cloud Shell interface. The current directory is `PYTHONAPP2`. The `Dockerfile` contains the following Dockerfile code:

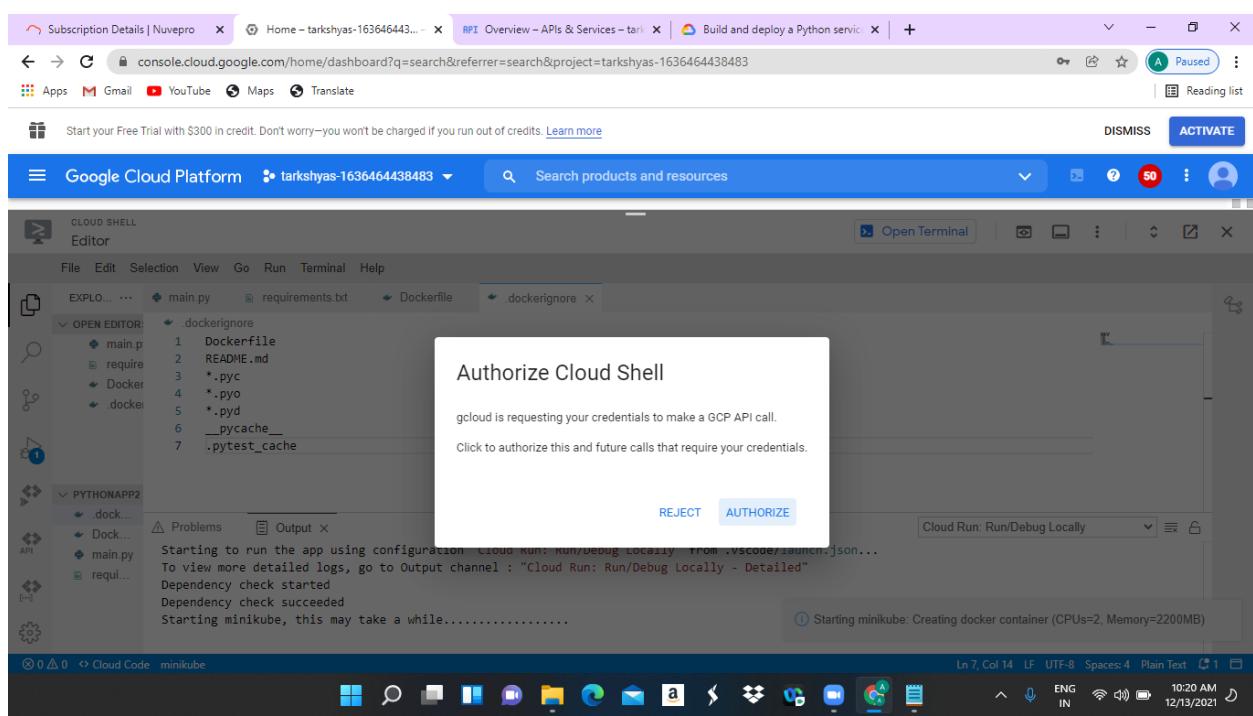
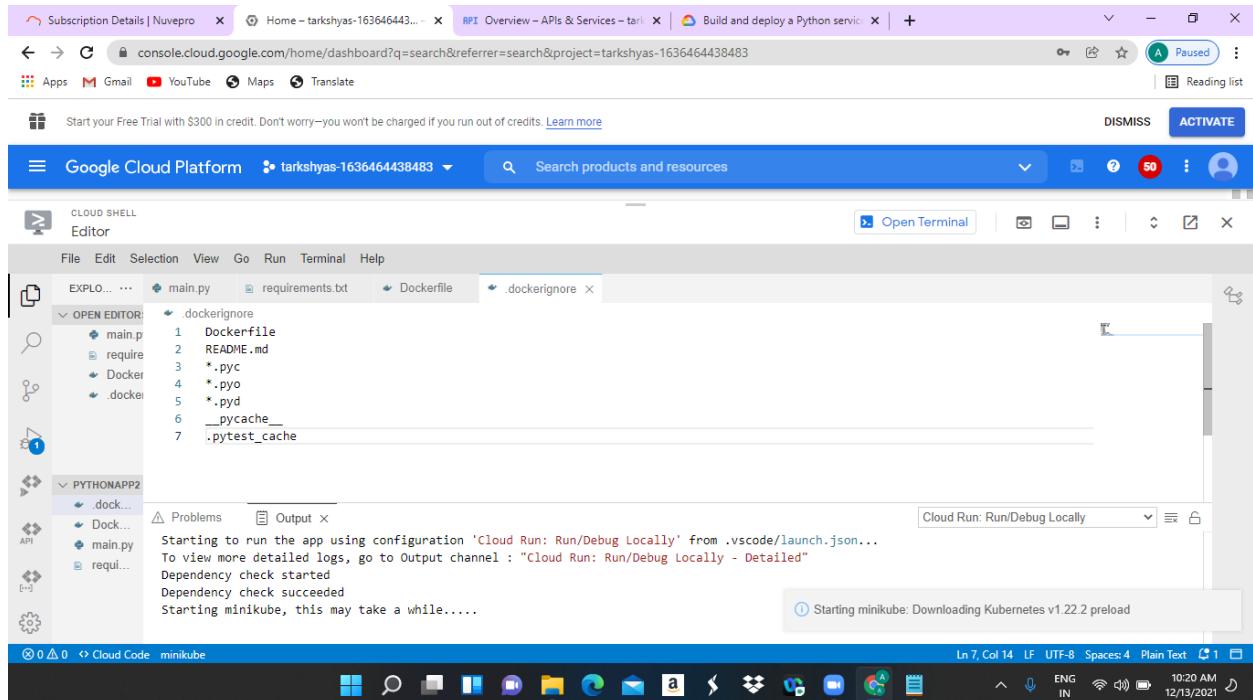
```
# Allow statements and log messages to immediately appear in the Knative logs
ENV PYTHONUNBUFFERED True

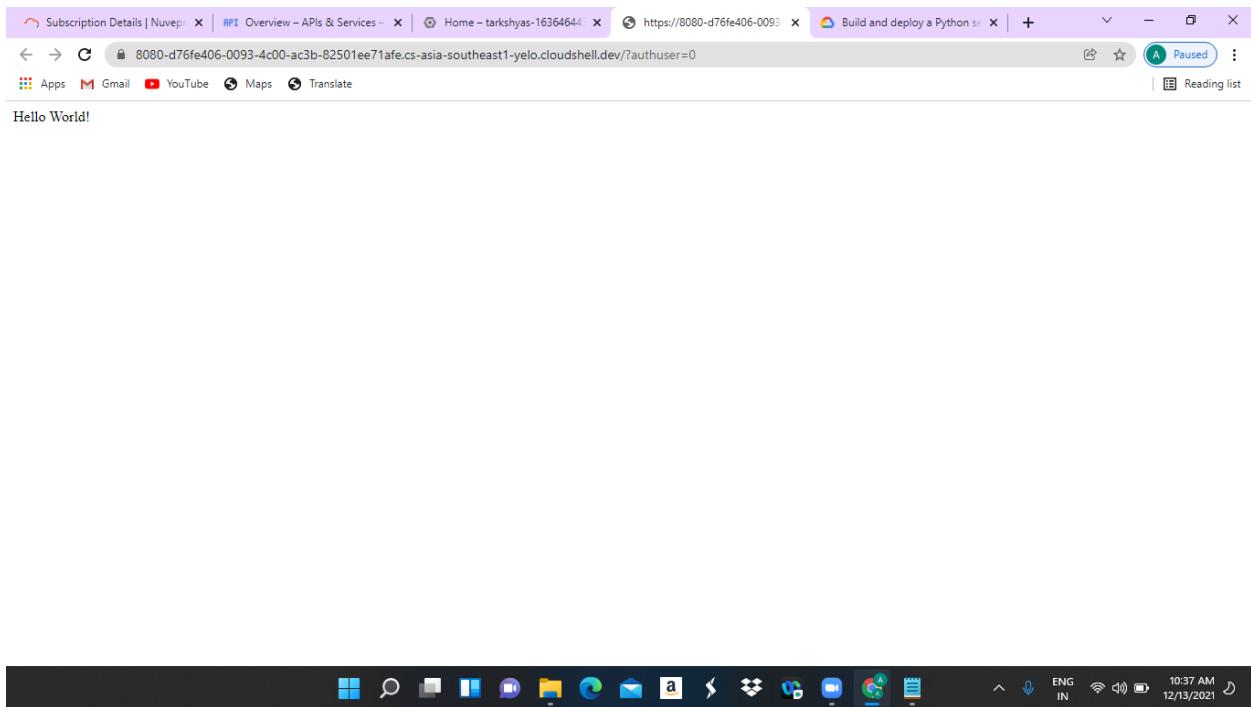
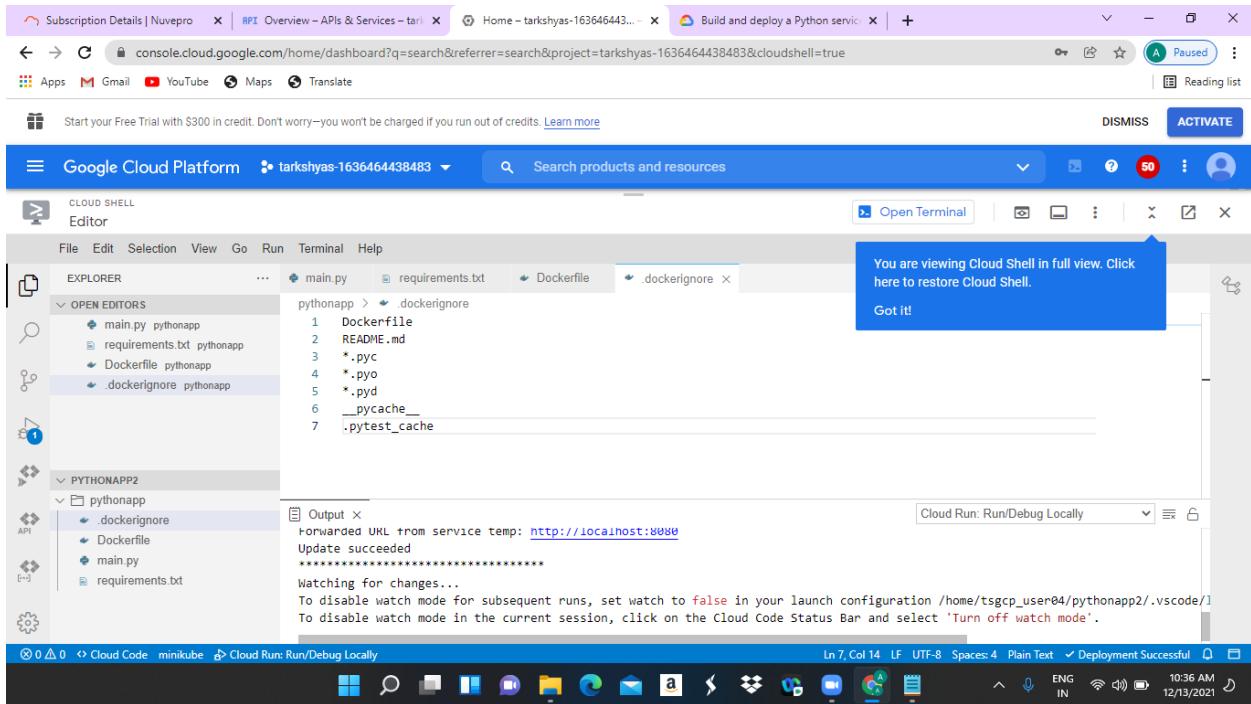
# Copy local code to the container image.
ENV APP_HOME /app
WORKDIR $APP_HOME
COPY . .

# Install production dependencies.
RUN pip install --no-cache-dir -r requirements.txt

# Run the web service on container startup. Here we use the gunicorn
# webserver, with one worker process and 8 threads.
# For environments with multiple CPU cores, increase the number of workers
# to be equal to the cores available.
# Timeout is set to 0 to disable the timeouts of the workers to allow Cloud Run to handle instance scaling.
CMD exec gunicorn --bind :$PORT --workers 1 --threads 8 --timeout 0 main:app
```







2. Github

New repository->Add the same 4 files->Cloud run on gcp->setup with cloud->click url.

4. VPC Peering.

a.Static: 2 VPC+firewalls->2 VMs->Reserve External IP->VPN->Go to VM->SSH->ping 'ip'

Subscription Details | Nuvepro

VPC networks - VPC network -

console.cloud.google.com/networking/networks/list?project=tarkshyas-1636464438483&cloudshell=false&pageTab=FIREWALLS

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VPC network

VPC networks CREATE VPC NETWORK REFRESH

	Region	Name	IP Range	Subnet Range	State
us-west4	default		10.182.0.0/20	10.182.0.1	Off
asia-southeast2	default		10.184.0.0/20	10.184.0.1	Off
europe-central2	default		10.186.0.0/20	10.186.0.1	Off
northamerica-northeast2	default		10.188.0.0/20	10.188.0.1	Off
asia-south2	default		10.190.0.0/20	10.190.0.1	Off
australia-southeast2	default		10.192.0.0/20	10.192.0.1	Off
southamerica-west1	default		10.194.0.0/20	10.194.0.1	Off
vpc1	1	1460	Custom		1 Off
asia-south2	v1		10.4.0.0/24	10.4.0.1	Off
vpc2	1	1460	Custom		1 Off
us-west2	v2		10.5.0.0/24	10.5.0.1	Off

External IP addresses - VPC network

console.cloud.google.com/networking/addresses/list?cloudshell=false&project=tarkshyas-1636464438483

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VPC network

External IP addresses RESERVE STATIC ADDRESS REFRESH RELEASE STATIC ADDRESS HIDE INFO PANEL

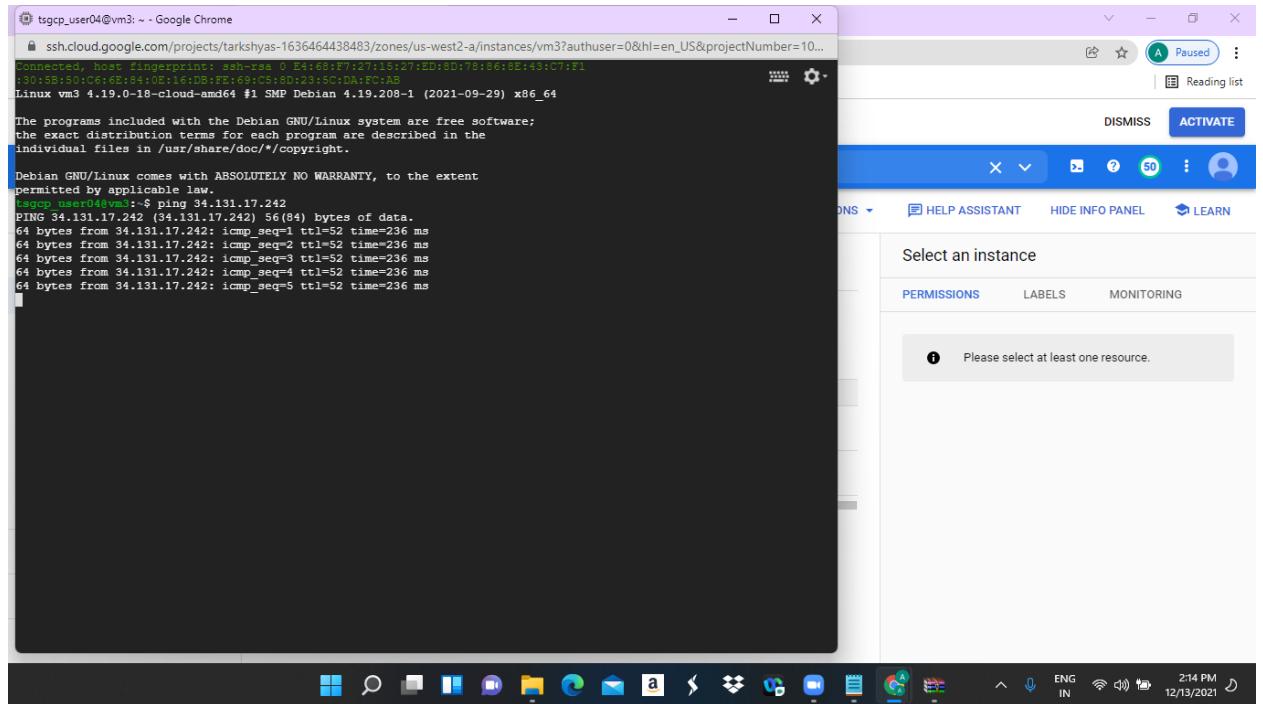
Filter Enter property name or value

Name	External Address	Region	Type	Version	In use by
qwerty1	34.131.17.242	asia-south2	Static	IPv4	VM instance vm1 (Zone asia-south2-a)
qwerty2	34.94.147.85	us-west2	Static	IPv4	VM instance vm3 (Zone us-west2-a)

Select an address

Labels help organize your resources (e.g., cost_center:sales or env:prod).

No addresses selected.



b.Dynamic: Hybrid connectivity->2 VPN->Classic->Cloud router,BGP->VM Ping

The search results for "hyb" include:

- Hybrid Connectivity
- Cloud Routers
- Edge hybrid | Cloud Architecture Center Documentation
- Apigee Hybrid | Apigee Documentation
- Tiered hybrid | Cloud Architecture Center Documentation
- Hybrid environment | Cloud Architecture Center Documentation
- Class HybridOptions | .NET client library Documentation

Subscription Details | Nuvepro Create a VPN - Hybrid Connect... +

console.cloud.google.com/hybrid/vpn/select?cloudshell=false&project=tarkshyas-1636464438483

Apps Gmail YouTube Maps Translate

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Google Cloud Platform tarkshyas-1636464438483 hyb

Hybrid Connectivity Create a VPN

VPN Interconnect Cloud Routers Network Connectivity Center

On-premise network VPC network

Gateway interface1 Gateway interface2

Tunnel1 Tunnel2

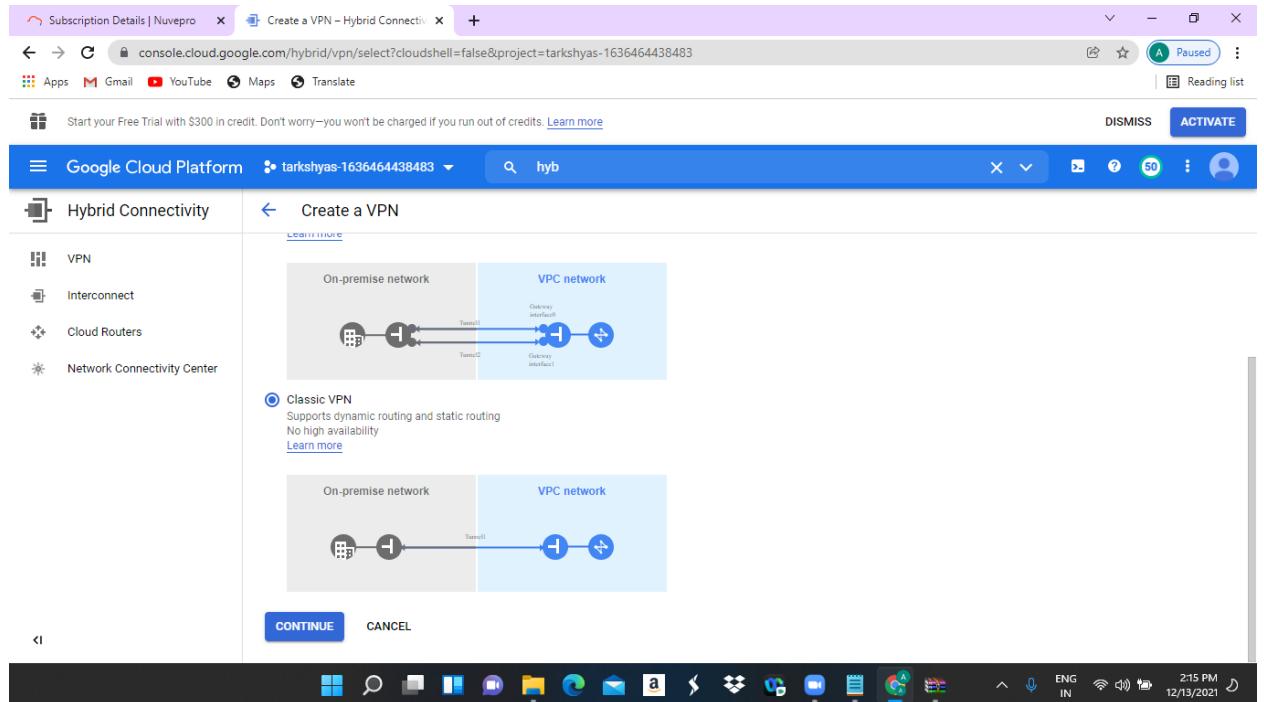
Classic VPN
Supports dynamic routing and static routing
No high availability
[Learn more](#)

On-premise network VPC network

Tunnel1

CONTINUE CANCEL

ENG IN 12:15 PM 12/13/2021



Subscription Details | Nuvepro

Create a VPN connection – Hybrid

console.cloud.google.com/hybrid/vpn/add?cloudshell=false&project=tarkshyas-1636464438483

Apps Gmail YouTube Maps Translate

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Google Cloud Platform tarkshyas-1636464438483 hyb

Hybrid Connectivity Create a VPN connection

VPN

Interconnect

Cloud Routers

Network Connectivity Center

Description

Name * point1

Region * asia-south2 (Delhi)

IP address *

CREATE IP ADDRESS

Reserve a new static IP address

No matches for "point1"

CANCEL C CREATING

New item

Name *

12:15 PM 12/13/2021

This screenshot shows the 'Create a VPN connection' page in the Google Cloud Platform. A modal window titled 'Reserve a new static IP address' is open, prompting for a name ('point1') and region ('asia-south2 (Delhi)'). The status bar at the bottom indicates it's 12:15 PM on 12/13/2021.

Subscription Details | Nuvepro

Create a VPN connection – Hybrid

console.cloud.google.com/hybrid/vpn/add?cloudshell=false&project=tarkshyas-1636464438483

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Google Cloud Platform tarkshyas-1636464438483 hyb

Hybrid Connectivity Create a VPN connection

VPN

Interconnect

Cloud Routers

Network Connectivity Center

Name * vpn-1-tunnel-1

Description

Remote peer IP address *

IKE version IKEv2

IKE pre-shared key * OWTI4Y3cXRWgUh3X5pTUI0WO186Jt| Generate and copy

Enter your own key or generate one automatically

⚠ Make sure you record the pre-shared key in a secure location. The key can't be retrieved after it's generated.

Copied to clipboard

Routing options

12:16 PM 12/13/2021

This screenshot shows the 'Create a VPN connection' page in the Google Cloud Platform. The 'IKE pre-shared key' field contains the value 'OWTI4Y3cXRWgUh3X5pTUI0WO186Jt'. A tooltip message 'Copied to clipboard' is visible. The status bar at the bottom indicates it's 12:16 PM on 12/13/2021.

Subscription Details | Nuvepro Create a VPN connection - Hybrid +

console.cloud.google.com/hybrid/vpn/add?cloudshell=false&project=tarkshyas-1636464438483

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Google Cloud Platform tarkshyas-1636464438483 hyb

Hybrid Connectivity Create a VPN connection

VPN Interconnect Cloud Routers Network Connectivity Center

Routing options DYNAMIC (BGP) ROUTE-BASED POLICY-BASED

Cloud Router *

Create new router

BGP session *

CANCEL DONE

ADD TUNNEL

CREATE CANCEL

Subscription Details | Nuvepro Create a VPN connection - Hybrid +

console.cloud.google.com/hybrid/vpn/add?cloudshell=false&project=tarkshyas-1636464438483

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Google Cloud Platform tarkshyas-1636464438483

Hybrid Connectivity Create a VPN connection

VPN Interconnect Cloud Routers Network Connectivity Center

Name * - router1

Description

Network * vpc1

Region * asia-south2 (Delhi)

Google ASN * 64555

BGP peer keepalive interval seconds

Advertised routes

Routes

Advertise all subnets visible to the Cloud Router (Default)

Create custom routes

CREATE CANCEL

Subscription Details | Nuvepro

Create a VPN connection - Hybrid

console.cloud.google.com/hybrid/vpn/add?cloudshell=false&project=tarkshyas-1636464438483

Apps Gmail YouTube Maps Translate

Reading list

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Google Cloud Platform tarkshyas

Hybrid Connectivity

VPN Routing Cloud Router

Interconnect Cloud Routers

Network Connectivity Center

BGP session

Name * bgp1

Peer ASN * 64556

Advertised route priority (MED)

Cloud Router BGP IP * 169.254.0.1

BGP peer IP * 169.254.0.2

BGP peer ?

Enabled

Disabled

ADVERTISED ROUTES, BIDIRECTIONAL FORWARDING DETECTION (BFD)

SAVE AND CONTINUE CANCEL

tsgcp_user04@vm3: ~ - Google Chrome

ssh.cloud.google.com/projects/tarkshyas-1636464438483/zones/us-west2-a/instances/vm3?authuser=0&hl=en_US&utm_source=gce&utm_medium=link

```
64 bytes from 34.131.17.242: icmp_seq=31 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=32 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=33 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=34 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=35 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=36 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=37 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=38 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=39 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=40 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=41 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=42 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=43 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=44 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=45 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=46 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=47 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=48 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=49 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=50 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=51 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=52 ttl=52 time=234 ms
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64 bytes from 34.131.17.242: icmp_seq=56 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=57 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=58 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=59 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=60 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=61 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=62 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=63 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=64 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=65 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=66 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=67 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=68 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=69 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=70 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=71 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=72 ttl=52 time=234 ms

```

tsgcp_user04@vm3: ~ - Google Chrome

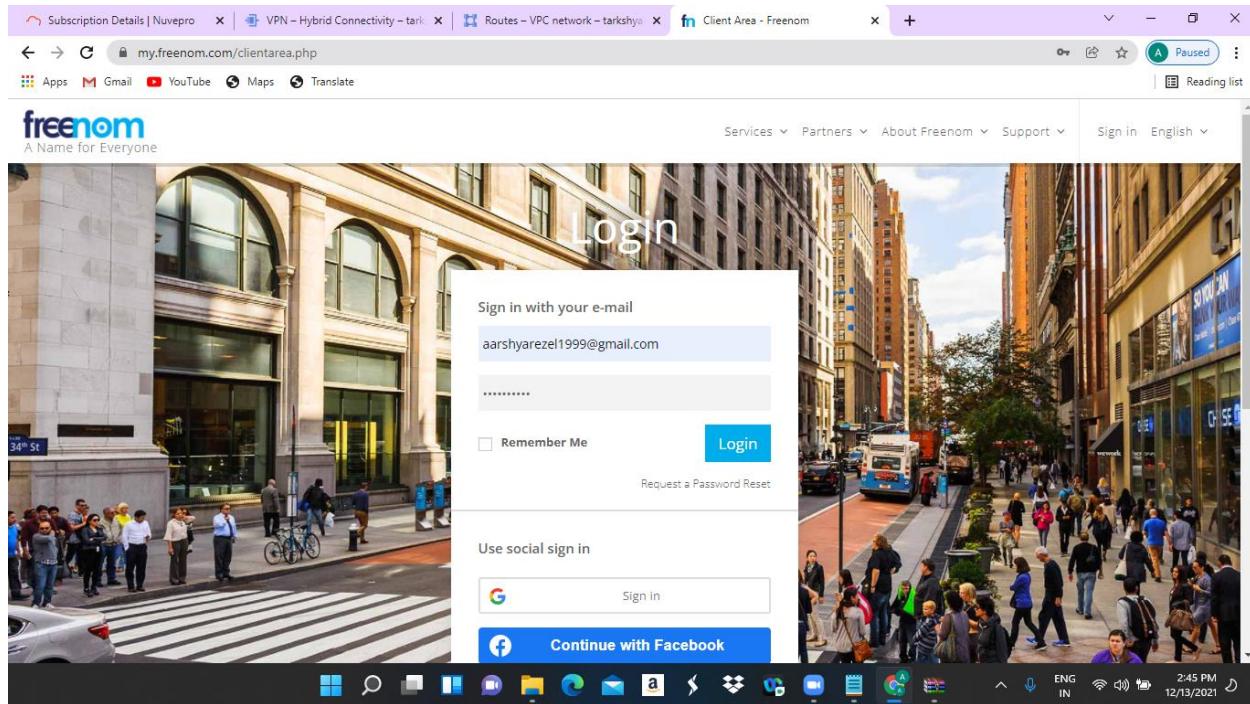
ssh.cloud.google.com/projects/tarkshyas-1636464438483/zones/us-west2-a/instances/vm3?authuser=0&hl=en_US&utm_source=gce&utm_medium=link

```
64 bytes from 34.131.17.242: icmp_seq=94 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=95 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=96 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=97 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=98 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=99 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=100 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=101 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=102 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=103 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=104 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=105 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=106 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=107 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=108 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=109 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=110 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=111 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=112 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=113 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=114 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=115 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=116 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=117 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=118 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=119 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=120 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=121 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=122 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=123 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=124 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=125 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=126 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=127 ttl=52 time=235 ms
64 bytes from 34.131.17.242: icmp_seq=128 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=129 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=130 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=131 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=132 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=133 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=134 ttl=52 time=234 ms
64 bytes from 34.131.17.242: icmp_seq=135 ttl=52 time=234 ms

```

5. Cloud dns.

VM instance creation with automation code->create zone in cloud DNS->Go to site ->copy paste name servers->Setup record set->check in chrome the dns name to get the output.



The screenshot shows a web browser window with the Google Cloud Platform URL: console.cloud.google.com/net-services/dns/zones/tarkshya-co-in/details?cloudshell=false&project=tarkshyas-1636464438483. The page shows the "Zone details" for the DNS zone "tarkshya-co-in". It lists basic settings such as DNS name (aarshya123.tk), Type (Public), and DNSSEC (Off). A success message is displayed: "DNS zone 'tarkshya-co-in' has been successfully created. Configure your domain at your registrar to make it accessible." The interface includes tabs for "EDIT", "+ ADD RECORD SET", and "DELETE ZONE".

The screenshot shows the Freenom Client Area interface. The top navigation bar includes links for 'Subscription Details | Nuvepro', 'tarkshya-co-in - Zone details - N', 'Routes - VPC network - tarkshya', 'Client Area - Freenom', and a search bar with the URL 'my.freenom.com/clientarea.php?action=domaindetails&id=1122573181'. Below the navigation is a toolbar with icons for 'Apps', 'Gmail', 'YouTube', 'Maps', and 'Translate'. The main content area features the Freenom logo and a sub-header 'A Name for Everyone'. A dropdown menu under 'Management Tools' is open, showing options like 'Nameservers', 'Register glue records', 'URL Forwarding', 'Dot TK Apps', 'Dot TK Ambassadors', and 'Cancel domain'. The 'Nameservers' section displays three entries: 'Nameserver 1' with value 'NS-CLOUD-A1.GOOGLEDOMAINS.COM', 'Nameserver 2' with value 'NS-CLOUD-A2.GOOGLEDOMAINS.COM', and 'Nameserver 3' with value 'NS-CLOUD-A3.GOOGLEDOMAINS.COM'. The URL in the browser's address bar is <https://my.freenom.com/#tab3>. The system tray at the bottom right shows the date and time as 12/13/2021 2:58 PM.

The screenshot shows the Google Cloud Platform Network services page. The left sidebar lists 'Network services' with options like Load balancing, Cloud DNS (selected), Cloud CDN, Cloud NAT, Traffic Director, Service Directory, Cloud Domains, Private Service Connect, Marketplace, and Release Notes. The main content area shows 'Resource record set details' for 'aarshya123.tk.' with a 'PREVIEW' button, an 'EDIT RESOURCE RECORD SET' button, and a 'DELETE RESOURCE RECORD SET' button. The 'Data' section lists four entries: 'ns-cloud-d1.googledomains.com.', 'ns-cloud-d2.googledomains.com.', 'ns-cloud-d3.googledomains.com.' (which is highlighted in blue), and 'ns-cloud-d4.googledomains.com.'. Below this is a 'EQUIVALENT REST' section. The URL in the browser's address bar is <https://console.cloud.google.com/net-services/dns/zones/tarkshya-co-in/rrsets/aarshya123.tk./NS/view?cloudshell=false&project=tarkshyas-1636464438483>. The system tray at the bottom right shows the date and time as 12/13/2021 2:59 PM.

Subscription Details | Nuvepro

Resource record set details - Net

Routes - VPC network - tarkshya

Client Area - Freenom

my.freenom.com/clientarea.php?action=domaindetails&id=1122573181

Apps Gmail YouTube Maps Translate

ns-cloud-d1.googledomains.com.

Nameserver 2

ns-cloud-d2.googledomains.com.

Nameserver 3

ns-cloud-d3.googledomains.com.

Nameserver 4

ns-cloud-d4.googledomains.com.

Nameserver 5

Change Nameservers

Subscription Details | Nuvepro

tarkshya-co-in - Zone details - N

VM instances - Compute Engine

Client Area - Freenom

console.cloud.google.com/net-services/dns/zones/tarkshya-co-in/details?cloudshell=false&project=tarkshyas-1636464438483

Apps Gmail YouTube Maps Translate

Start your Free Trial with \$300 in credit. Don't worry—you won't be charged if you run out of credits. [Learn more](#)

DISMISS ACTIVATE

Google Cloud Platform tarkshyas-1636464438483 vm

Network services

Zone details

EDIT ADD RECORD SET DELETE ZONE LOGS REGISTRAR SETUP

Type: Public

DNSSEC: Off

Cloud Logging: Off

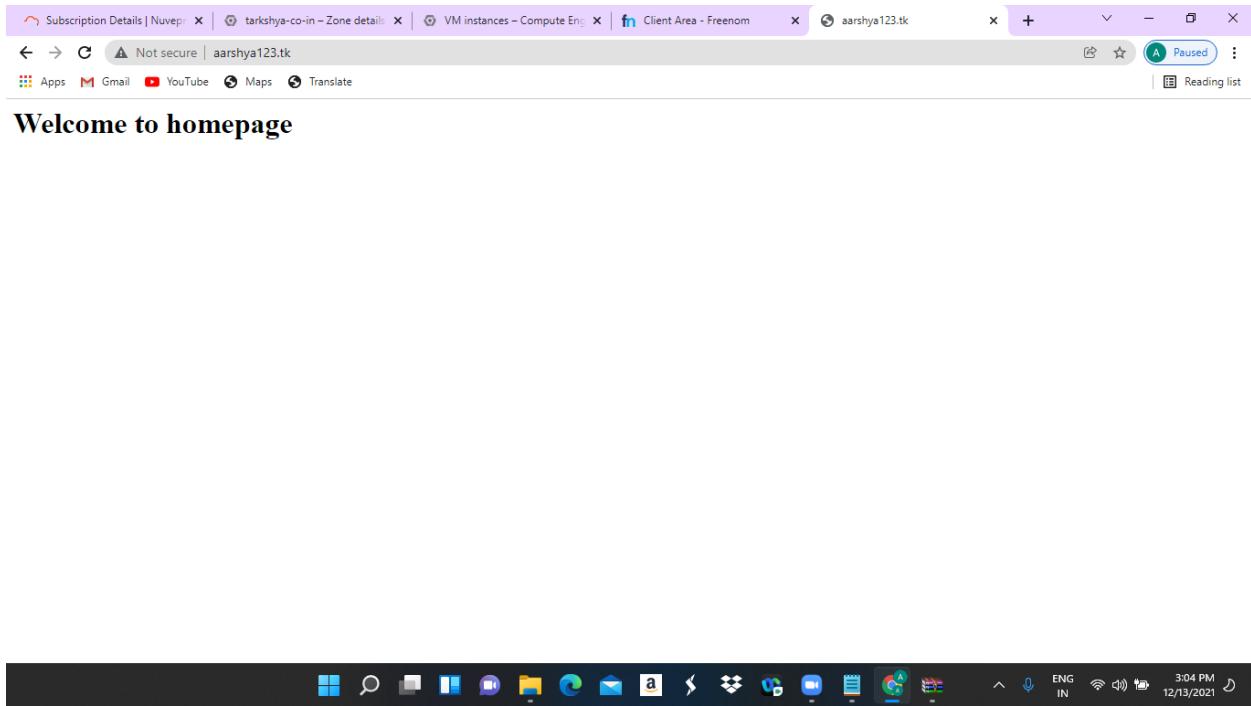
RECORD SETS

ADD RECORD SET DELETE RECORD SETS REFRESH

Filter: Filter record sets

DNS name	Type	TTL (seconds)	Routing policy
aarshya123.tk.	A	300	Default
aarshya123.tk.	SOA	21600	Default
aarshya123.tk.	NS	21600	Default
www.aarshya123.tk.	CNAME	300	Default

EQUIVALENT REST



6. Load balancing http and tcp.
VPC+firewall creation->VM instances(instance templates with automation code,instance group with health check)->load balancer(backend service, frontend service)->create->Check the ip in load balancer.

Subscription Details | Nuvepro

Google Cloud Platform

console.cloud.google.com/compute/instanceTemplates/add?cloudshell=false&project=tarkshyas-1636464438483&if_reserved

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DISMISSED ACTIVATE

Google Cloud Platform tarkshyas-1636464438483 vm

Compute Engine Create an instance template

Virtual machines VM instances Instance templates Sole-tenant nodes Machine images TPUs Committed use discounts Migrate for Compute Engi... Marketplace Release Notes

Create Cancel

Equivalent REST or command line

Subscription Details | Nuvepro

Google Cloud Platform

console.cloud.google.com/compute/instanceTemplates/add?cloudshell=false&project=tarkshyas-1636464438483&if_reserved

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DISMISSED ACTIVATE

Google Cloud Platform tarkshyas-1636464438483

Compute Engine Boot disk

Select an image to create a boot disk. The image determines the operating system installed on the instance. Can't find what you're looking for? Explore hundreds of VM solutions in [Marketplace](#).

Public Images Custom images

Operating system Ubuntu

Version Debian GNU/Linux 10 (buster)

amd64 built on , supports Shielded VM features

Boot disk type Balanced persistent disk Size (GB) 10

Select Cancel

Subscription Details | Nuvepro

Google Cloud Platform

console.cloud.google.com/compute/instanceTemplates/add?cloudshell=false&project=tarkshyas-1636464438483&if_reserved

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DISMISSED ACTIVATE

Google Cloud Platform tarkshyas-1636464438483

```

Commands.txt - Notepad
File Edit Format View Help
LINK: https://ust-global.zoom.us/j/95479336041

1.BIG QUERY
Public datasets: https://console.cloud.google.com/bigquery?project=bigquery-public-data&page=project

2.CLOUD RUN
https://cloud.google.com/run/docs/quickstarts/build-and-deploy/python

3.LOAD BALANCING AUTOMATION
#!/bin/bash
apt-get update
apt-get install -y apache2
cat <>EOF> /var/www/html/index.html
<html><body><h1>Traffic from ${hostname}</h1>
</body></html>
EOF

4.TERRAFORM DOWNLOAD --> registry.terraform.io
a.codes:https://registry.terraform.io/providers/hashicorp/google/latest/docs/guides/getting_started
b.https://releases.hashicorp.com/terraform/

5.BIG TABLE
https://cloud.google.com/bigtable/docs/quickstart-hbase

6.MONITORING
a.sudo apt-get update
sudo apt-get install -y apache2
echo "<h1>Welcome to homepage</h1>" > /var/www/html/index.html

b.https://cloud.google.com/monitoring/quickstart-lamp

7.DNS

```

The screenshot shows a web browser window with the following details:

- Address Bar:** console.cloud.google.com/compute/instanceGroups/add?cloudshell=false&project=tarkshyas-1636464438483&rif_reserved
- Header:** Google Cloud Platform
- Content:**
 - Create an instance group**
 - New unmanaged instance group**: A group of VMs that you manage yourself. Supports: load balancing.
 - Number of instances**: Based on autoscaling configuration.
 - Autoscaling**: Use autoscaling to allow automatic resizing of this instance group for periods of high and low load. [Autoscaling groups of instances](#).
 - Autoscaling mode** (selected):
 - Autoscale**: Turn on autoscaling to add and remove instances in the instance group.
 - Don't autoscale**: Turn off autoscaling and keep the autoscaling configuration.
 - Autoscale only out**: Use autoscaling to only add instances in the instance group.
 - Predictive autoscaling**: Use predictive autoscaling to predict future capacity needs based on historical CPU load. [Learn more](#). **Off** (radio button selected): No predictive method is used. The autoscaler scales the group to meet current needs.
- Bottom Status Bar:** ENG IN 12:17 PM 12/13/2021

Subscription Details | Nuvepro

Instance groups – Compute Engine

console.cloud.google.com/compute/instanceGroups/list?project=tarkshyas-1636464438483&cloudshell=false

Paused

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DISMISS ACTIVATE

Google Cloud Platform tarkshyas-1636464438483 vm

Compute Engine Instance groups CREATE INSTANCE GROUP REFRESH DELETE HELP ASSISTANT LEARN

Virtual machines VM instances Instance templates Sole-tenant nodes Machine images TPUs Committed use discounts Migrate for Compute Engi... Marketplace Release Notes

Instance groups are collections of VM instances that use load balancing and automated services, like autoscaling and autohealing. [Learn more](#)

Filter Enter property name or value

Status	Name	Instances	Template	Group type	Creation time	Recommendation	Autoscaling	Zone
instance-group-1	-	Undefined						

12:20 PM 12/13/2021

The screenshot shows the Google Cloud Platform Compute Engine Instance Groups page. The left sidebar is collapsed, showing 'Virtual machines' under 'VM instances'. The main area shows a table with one row for 'instance-group-1'. The table columns are: Status, Name, Instances, Template, Group type, Creation time, Recommendation, Autoscaling, and Zone. The 'Name' column shows 'instance-group-1', and the 'Instances' column shows 'Undefined'. The 'Status' column has a green checkmark icon.

Subscription Details | Nuvepro

VM instances – Compute Engine

console.cloud.google.com/compute/instances?referrer=search&cloudshell=false&project=tarkshyas-1636464438483

Paused

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DISMISS ACTIVATE

Google Cloud Platform tarkshyas-1636464438483 vm

Compute Engine VM instances CREATE INSTANCE IMPORT VM OPERATIONS HELP ASSISTANT HIDE INFO PANEL LEARN

Virtual machines VM instances Instance templates Sole-tenant nodes Machine images TPUs Committed use discounts Migrate for Compute Engi... Marketplace Release Notes

INSTANCES INSTANCE SCHEDULE

VM instances are highly configurable virtual machines for running workloads on Google infrastructure. [Learn more](#)

Filter Enter property name or value

Status	Name	Zone	Recommendations	In use	Connect
instance-group-1-9xcr	instance-group-1-9xcr	us-central1-a	instan	SSH	⋮
instance-group-1-wtcf	instance-group-1-wtcf	us-central1-a	instan	SSH	⋮

Select an instance

PERMISSIONS LABELS MONITORING

Please select at least one resource.

12:39 PM 12/13/2021

The screenshot shows the Google Cloud Platform Compute Engine VM Instances page. The left sidebar is collapsed, showing 'Virtual machines' under 'VM instances'. The main area shows a table with two rows. The table columns are: Status, Name, Zone, Recommendations, In use, and Connect. The 'Name' column shows 'instance-group-1-9xcr' and 'instance-group-1-wtcf'. The 'Zone' column shows 'us-central1-a' for both. The 'Status' column has green checkmarks. The 'In use' column shows 'instan' and the 'Connect' column shows 'SSH' with a dropdown arrow.

Subscription Details | Nuvepro

New HTTP(S) load balancer – Netw...

Build and deploy a Python service...

Build and deploy a Python service...

console.cloud.google.com/net-services/loadbalancing/httpAdvanced/add?cloudshell=false&project=tarkshyas-1636464438483

Paused

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DISMIS

ACTIVATE

Google Cloud Platform tarkshyas-1636464438483 load balancer

Network services

New HTTP(S) load balancer

Load balancing

Cloud DNS

Cloud CDN

Cloud NAT

Traffic Director

Service Directory

Cloud Domains

Private Service Connect

Marketplace

Release Notes

Name *

Lowercase, no spaces.

Backend configuration

Host and path rules

Frontend configuration

Review and finalize (optional)

CREATE CANCEL

Frontend configuration

Specify an IP address, port and protocol. This IP address is the frontend IP for your clients requests. For SSL, a certificate must also be assigned.

New Frontend IP and port

Name

Lowercase, no spaces.

Protocol

HTTP

DESCRIPTION

Network Service Tier

Premium

IP version

IP address

1:14 PM 12/13/2021

Subscription Details | Nuvepro

Load balancing – Network services

Build and deploy a Python service...

Build and deploy a Python service...

console.cloud.google.com/net-services/loadbalancing/list/loadBalancers?cloudshell=false&project=tarkshyas-1636464438483

Paused

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DISMIS

ACTIVATE

Google Cloud Platform tarkshyas-1636464438483 load balancer

Network services

Load balancing

+ CREATE LOAD BALANCER

REFRESH

DELETE

LOAD BALANCERS BACKENDS FRONTENDS

Filter Enter property name or value

Name	Load balancer type	Protocols	Region	Backends
main	HTTP(S)			

To edit load balancing resources like forwarding rules and target proxies, go to the [advanced menu](#).

1:14 PM 12/13/2021

The screenshot shows the 'Load balancer details' page in the Google Cloud Platform. The main configuration section is displayed under the 'main' tab. The 'Frontend' section shows an IP:Port of 34.95.80.7:80. The 'Host and path rules' section shows a single entry for 'All unmatched (default)'. The 'Backend' section lists a single 'backend' service.

Protocol	IP:Port	Certificate	SSL Policy	Network Tier
HTTP	34.95.80.7:80	-	-	Premium

Hosts	Paths	Backend
All unmatched (default)	All unmatched (default)	backend

This screenshot is identical to the one above, but the 'IP:Port' field in the 'Frontend' section is highlighted with a blue selection bar, indicating it is the active or selected field.

7. GKE

Exp: Launch Cloud Shell.-> Set default settings for the gcloud tool.->Create a GKE cluster. ->Get authentication credentials for the cluster.->Deploy an application to the cluster. ->Create the Deployment. Expose the Deployment. Inspect and view the application.

Welcome to Cloud Shell! Type "help" to get started.
Your Cloud Platform project in this session is set to **tarkshyas-1636464438483**.
Use "gcloud config set project [PROJECT_ID]" to change to a different project.
tsgcsp user04@cloudshell:~ (tarkshyas-1636464438483)\$ docker run -d -p 8080:80 nginx:latest
Unable to find image 'nginx:latest' locally
latest: Pulling from library/nginx
e5ae69f74026: Pull complete
21e0df283cd6: Pull complete
ed035d64cd: Pull complete
681ff011fc97: Pull complete
77700c52e957: Pull complete
44be98c004fb: Pull complete
Digest: sha256:9522864dd661dcddf9958f9e0de192a1ffd2a2c162a35668ab6ac42b465f0603
Status: Downloaded newer image for nginx:latest
f1fdf6232f8ffa2b9e5a80b5f6e76b54f3ef5ed5e327dcdfa1956b553c904ef
tsgcsp user04@cloudshell:~ (tarkshyas-1636464438483)\$ vi index.html
tsgcsp user04@cloudshell:~ (tarkshyas-1636464438483)\$ docker ps

You are viewing Cloud Shell in full view. Click here to restore Cloud Shell.
Got it!

Welcome to Cloud Shell! Type "help" to get started.
Your Cloud Platform project in this session is set to **tarkshyas-1636464438483**.
Use "gcloud config set project [PROJECT_ID]" to change to a different project.
tsgcsp user04@cloudshell:~ (tarkshyas-1636464438483)\$ docker run -d -p 8080:80 nginx:latest
Unable to find image 'nginx:latest' locally
latest: Pulling from library/nginx
e5ae69f74026: Pull complete
21e0df283cd6: Pull complete
ed035d64cd: Pull complete
681ff011fc97: Pull complete
77700c52e957: Pull complete
44be98c004fb: Pull complete
Digest: sha256:9522864dd661dcddf9958f9e0de192a1ffd2a2c162a35668ab6ac42b465f0603
Status: Downloaded newer image for nginx:latest
f1fdf6232f8ffa2b9e5a80b5f6e76b54f3ef5ed5e327dcdfa1956b553c904ef
tsgcsp user04@cloudshell:~ (tarkshyas-1636464438483)\$ vi index.html
tsgcsp user04@cloudshell:~ (tarkshyas-1636464438483)\$ docker ps

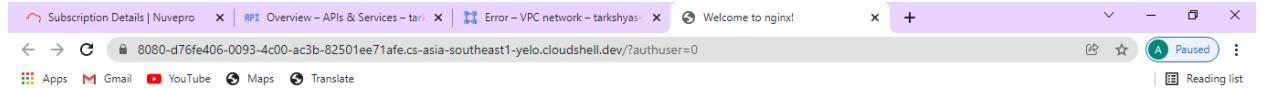
CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
f1fdf6232f8f	nginx:latest	"./docker-entrypoint..."	33 seconds ago	Up 31 seconds	0.0.0.0:8080->80/tcp	upbeat Payne

tsgcsp user04@cloudshell:~ (tarkshyas-1636464438483)\$ docker cp index.html container f1fdf6232f8f:/usr/share/nginx/html
"docker cp" requires exactly 2 arguments.
See 'docker cp --help'.
Usage: docker cp [OPTIONS] CONTAINER:[SRC PATH] DEST PATH|-
docker cp [OPTIONS] SRC_PATH|- CONTAINER:DEST_PATH
Copy files/folders between a container and the local filesystem
tsgcsp user04@cloudshell:~ (tarkshyas-1636464438483)\$

The screenshot shows a web browser with several tabs open. The active tab is a Cloud Shell terminal window titled 'Terminal' with the identifier '(tarkshyas-1636464438483)'. The terminal displays a series of Docker commands being run:

```
Welcome to Cloud Shell!! Type "help" to get started.  
Your Cloud Platform project in this session is set to tarkshyas-1636464438483.  
Use "gcloud config set project [PROJECT_ID]" to change to a different project.  
tsgcpr user04@cloudshell:~ (tarkshyas-1636464438483)$ docker run -d -p 8080:80 nginx:latest  
Unable to find image 'nginx:latest' locally  
latest: Pulling from library/nginx  
e5ae68f74026: Pull complete  
21e0df283cd6: Pull complete  
ed835de16acd: Pull complete  
881ff011f1c9: Pull complete  
77700c52c969: Pull complete  
44be98c0fab6: Pull complete  
Digest: sha256:9522864dd661dcadfd9958f9e0de192a1ffda2c162a35668ab6ac42b465f0603  
Status: Downloaded newer image for nginx:latest  
f1dfd6232f8ffa2b965d80b45f6a76b54f3cf5ed5e327dcdfa1956b553c904ef  
tsgcpr user04@cloudshell:~ (tarkshyas-1636464438483)$ vi index.html  
tsgcpr user04@cloudshell:~ (tarkshyas-1636464438483)$ docker ps  
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES  
f1dfd6232f8f nginx:latest "/docker-entrypoint..." 33 seconds ago Up 31 seconds 0.0.0.0:8080->80/tcp upbeat_payne  
tsgcpr user04@cloudshell:~ (tarkshyas-1636464438483)$ docker cp index.html container f1dfd6232f8f:/usr/share/nginx/html  
"docker cp" requires exactly 2 arguments.  
See 'docker cp --help'.  
Usage: docker cp [OPTIONS] CONTAINER:SRC_PATH DEST_PATH|-  
      docker cp [OPTIONS] SRC_PATH|- CONTAINER:DEST_PATH  
Copy files/folders between a container and the local filesystem  
tsgcpr user04@cloudshell:~ (tarkshyas-1636464438483)$
```

A context menu is open over the terminal window, with the option 'Preview on port 8080' highlighted. The status bar at the bottom right shows '10:47 AM 12/13/2021'.



Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

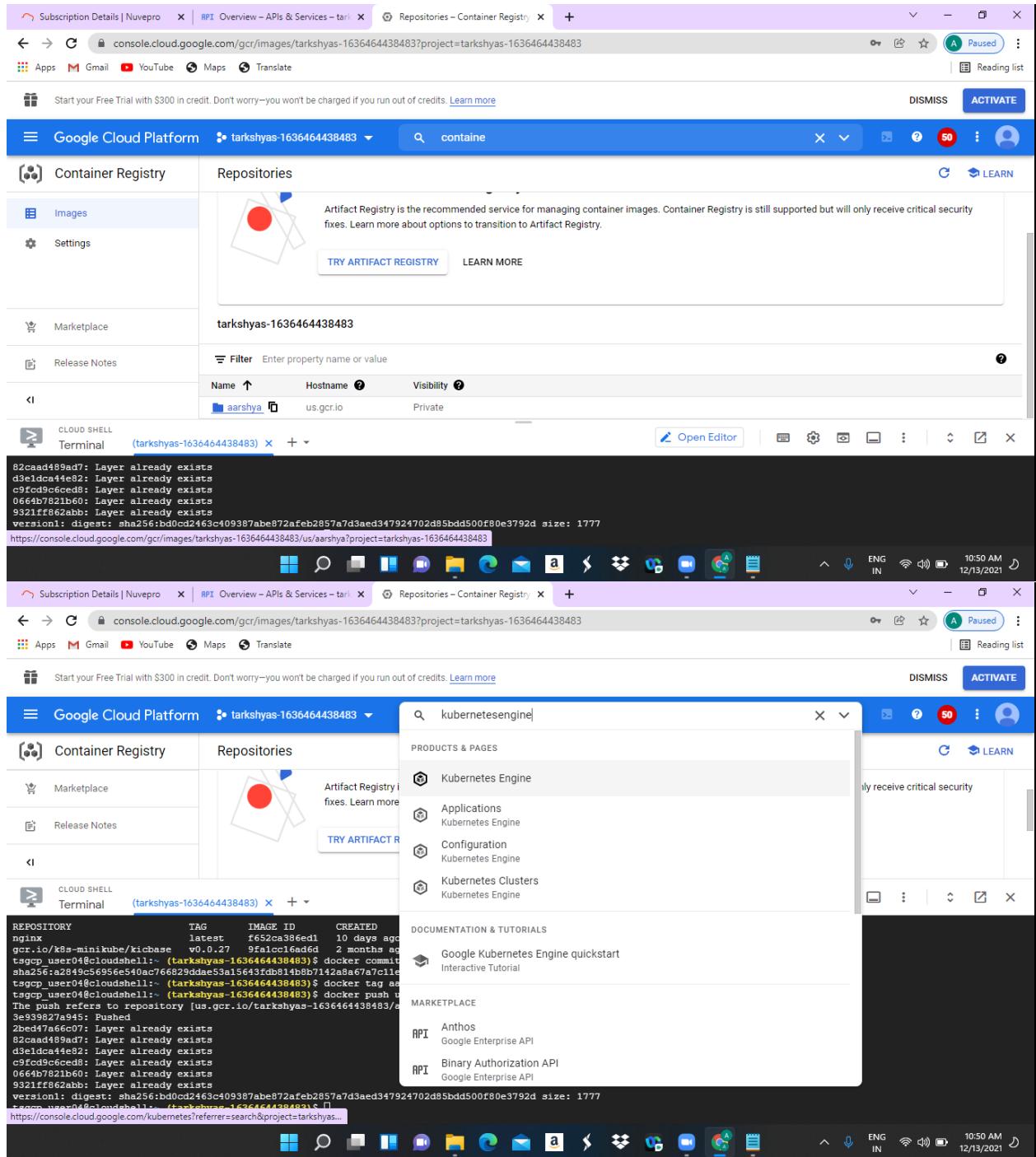
For online documentation and support please refer to nginx.org.
Commercial support is available at nginx.com.

Thank you for using nginx.

```
f1dfd6232f8fa2b29e5d80b45f6a76b54f3cef5ed5e327dcdf1e195b553c904ef
tsgcp user04@cloudshell:~ (tarkshyas-1636464438483)$ vi index.html
tsgcp user04@cloudshell:~ (tarkshyas-1636464438483)$ docker ps
CONTAINER ID   IMAGE          COMMAND       CREATED      STATUS        PORTS     NAMES
f1dfd6232f8f  nginx:latest  "/docker-entrypoint..."  33 seconds ago  Up 31 seconds  0.0.0.0:8080->80/tcp  upbeat Payne
tsgcp user04@cloudshell:~ (tarkshyas-1636464438483)$ docker cp index.html container f1dfd6232f8f:/usr/share/nginx/html
"docker cp" requires exactly 2 arguments.
See 'docker cp --help'.

Usage:  docker cp [OPTIONS] CONTAINER:SRC_PATH DEST_PATH|- 
        docker cp [OPTIONS] SRC_PATH|- CONTAINER:DEST_PATH

Copy files/folders between a container and the local filesystem
tsgcp user04@cloudshell:~ (tarkshyas-1636464438483)$ docker images
REPOSITORY          TAG      IMAGE ID      CREATED       SIZE
nginx              latest   f652ca38ed1  10 days ago  141MB
gcr.io/k8s-minikube/kicbase  v0.0.27  9fa1cc16ad6d  2 months ago  1.08GB
tsgcp user04@cloudshell:~ (tarkshyas-1636464438483)$ docker commit f1dfd6232f8f aarshya:version1
sha256:a2849c695e5e40ac766829ddae53a15e43fdb14b8b7142a8a67a7c11e9f65e
tsgcp user04@cloudshell:~ (tarkshyas-1636464438483)$ docker tag aarshya:version1 us.gcr.io/tarkshyas-1636464438483/aarshya:version1
tsgcp user04@cloudshell:~ (tarkshyas-1636464438483)$ docker push us.gcr.io/tarkshyas-1636464438483/aarshya:version1
The push refers to repository [us.gcr.io/tarkshyas-1636464438483/aarshya]
3e939827a45: Pushing [=====>] 12.8kB
2bed47a66c07: Layer already exists
82caad489ad7: Layer already exists
d3el1dc44e82: Layer already exists
c9fcfd9c6ced8: Layer already exists
0664b7821b60: Layer already exists
9321ff862abb: Layer already exists
[
```



Subscription Details | Nuvepro | API Overview – APIs & Services – tarkshyas-1636464438483 | Kubernetes clusters – Kubernetes Engine

console.cloud.google.com/kubernetes/list/overview?project=tarkshyas-1636464438483

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DISMISS ACTIVATE

Google Cloud Platform

Kubernetes Engine

Clusters Workloads Services & Ingress Applications Marketplace Release Notes

CLOUD SHELL Terminal (tarkshyas-1636464438483)

Connect to the cluster

You can connect to your cluster via command-line or using a dashboard.

Command-line access

Configure [kubectl](#) command line access by running the following command:

```
$ gcloud container clusters get-credentials tempcluster --zone us-central1-c --project tarkshyas-1636464438483
```

[Copy](#) [RUN IN CLOUD SHELL](#)

Cloud Console dashboard

You can view the workloads running in your cluster in the Cloud Console [Workloads dashboard](#).

[OPEN WORKLOADS DASHBOARD](#)

OK

10:55 AM 12/13/2021

Subscription Details | Nuvepro | API Overview – APIs & Services – tarkshyas-1636464438483 | Kubernetes clusters – Kubernetes Engine

console.cloud.google.com/kubernetes/list/overview?project=tarkshyas-1636464438483&cloudshell=true

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Google Cloud Platform tarkshyas-1636464438483

Search products and resources

Kubernetes Engine Kubernetes clusters + CREATE + DEPLOY REFRESH OPERATIONS

Clusters Marketplace Release Notes

CLOUD SHELL Terminal (tarkshyas-1636464438483)

OVERVIEW COST OPTIMIZATION PREVIEW

Filter Enter property name or value

Status	Name	Location	Number of nodes	Total vCPUs	Total memory	Notifications	Labels
<input type="checkbox"/>	<input checked="" type="checkbox"/> tempcluster	us-central1-c	3	6	12 GB	-	...

Open Editor

```
version:1 digest: sha256:bd0cd2463c409387abe872afeb2857a7d3aed347924702d85bdd500f80e3792d size: 1777  
tsgcpc_user04@cloudshell:~ (tarkshyas-1636464438483)$ Version:1 digest: sha256:bd0cd2463c409387abe872afeb2857a7d3aed347924702d85bdd500f80e3792d size: 1777  
-bash: version:1: command not found  
tsgcpc_user04@cloudshell:~ (tarkshyas-1636464438483)$ gcloud container clusters get-credentials tempcluster --zone us-central1-c --project tarkshyas-1636464438483  
Fetching cluster endpoint and auth data.  
kubeconfig entry generated for tempcluster.  
tsgcpc_user04@cloudshell:~ (tarkshyas-1636464438483)$ kubectl create deployment web-server --image=us.gcr.io/tarkshyas-1636464438483/aarshya:version1  
deployment.apps/web-server created  
tsgcpc_user04@cloudshell:~ (tarkshyas-1636464438483)$ kubectl expose deployment web-server --type LoadBalancer --port 80 --target-port 8080  
service/web-server exposed  
tsgcpc_user04@cloudshell:~ (tarkshyas-1636464438483)$
```

11:00 AM 12/13/2021

The screenshot shows the Google Cloud Platform interface. In the top navigation bar, there are tabs for 'Subscription Details | Nuvepro', 'API Overview – APIs & Services – tam...', and 'Kubernetes clusters – Kubernetes'. Below the navigation bar, there's a banner for a free trial and a 'DISMISS' button. The main area is titled 'Google Cloud Platform' with a dropdown for 'tarkshyas-1636464438483'. A sidebar on the left lists 'Clusters', 'Marketplace', and 'Release Notes'. The main content area is titled 'Kubernetes Engine' and 'Clusters'. It shows a table with one cluster entry: 'tempcluster' in 'us-central1-c' with 3 nodes, 6 vCPUs, 12 GB memory, and no notifications or labels. Below the table is a 'CLOUD SHELL' terminal window titled '(tarkshyas-1636464438483)'. The terminal shows command-line output for creating a deployment and exposing it as a LoadBalancer service. The bottom of the screen shows a taskbar with various icons.

8. Terraform and Ansible.

a. Terraform

Download sdk->download terraform->Add 4 files(terraform exe, json key file generated from service account,configuration file,provider file) to a folder->Open the same in Visual Studio->cmd->initialize,apply terraform->VM is created->terraform destroy to destroy it.

The screenshot shows a Visual Studio Code window with multiple tabs open. The tabs include 'provider.tf - Ansible - Visual Studio Code', 'configuration.tf', and 'provider.tf'. The provider.tf file contains the following Terraform code:

```

resource "google_compute_instance" "vm_instance" {
  name          = "terraform-instance"
  machine_type = "f1-micro"

  boot_disk {
    initialize_params [
      {
        image = "debian-cloud/debian-9"
      }
    ]
  }

  network_interface {
    # A default network is created for all GCP projects
    network = "default"
    access_config {}
  }
}

```

The left sidebar shows an 'EXPLORER' view with files like 'Get Started', 'configuration.tf', 'provider.tf', 'tempkey.json', and 'terraform.exe'. The bottom status bar shows 'Ln 6, Col 24' and other system information.

VM instances – Computer Engine

File Edit Selection View Go Run Terminal Help configuration.tf – Ansible - Visual Studio Code

OPEN EDITORS Get Started configuration.tf provider.tf

ANSIBLE configuration.tf provider.tf tempkey.json terraform.exe

```
provider "google" {
  credentials = file("tempkey.json")
  project = "tarkshyas-1636464438483"
  region = "us-central1"
  zone = "us-central1-c"
}
```

Trainer Trainer

VM instances – Compute Engine | Subscription Details | Nuvep | Download Terraform - Terraform | Getting Started with the Google Cloud Platform | You are now authenticated with Google | cloud.google.com/sdk/auth_success

Cloud SDK: Command Line Interface

Did not print [39] options.
Too many options [89]. Enter "list" at prompt to print choices fully.
Please enter numeric choice or text value (must exactly match list item): 50

Your project default Compute Engine zone has been set to [asia-northeast3-a].
You can change it by running [gcloud config set compute/zone NAME].

Your project default Compute Engine region has been set to [asia-northeast3].
You can change it by running [gcloud config set compute/region NAME].

Your Google Cloud SDK is configured and ready to use!

- * Commands that require authentication will use tsgcp_user0@tarkshyagcp.nuvelabs.com by default
- * Commands will reference project "tarkshyas-1636464438483" by default
- * Compute Engine commands will use region `asia-northeast3` by default
- * Compute Engine commands will use zone `asia-northeast3-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 SDK like arg files and output formatting

C:\Users\THANKU\Desktop\Ansible>

If you're a client application developer and want to find out more about accessing Google Cloud services with a

Trainer Trainer

The screenshot shows two browser windows side-by-side.

Top Window: A command prompt window titled "Command Prompt - terraform apply". It displays the following Terraform configuration code:

```
+ access_config {
    + nat_ip      = (known after apply)
    + network_tier = (known after apply)
}
+ scheduling {
    + automatic_restart  = (known after apply)
    + min_node_cpus     = (known after apply)
    + on_host_maintenance = (known after apply)
    + preemptible       = (known after apply)
}
+ node_affinities {
    + key      = (known after apply)
    + operator = (known after apply)
    + values   = (known after apply)
}
}
plan: 1 to add, 0 to change, 0 to destroy.
```

It then asks for confirmation:

Do you want to perform these actions?
Terraform will perform the actions described above.
Only 'yes' will be accepted to approve.

Enter a value: yes

google_compute_instance.vm_instance: Creating...

SQL, and Cloud DNS (which are all bundled with Cloud SDK), see Accessing services with the gcloud tool.

Bottom Window: A Google Cloud Platform (GCP) interface showing the "Compute Engine" section under "VM instances".

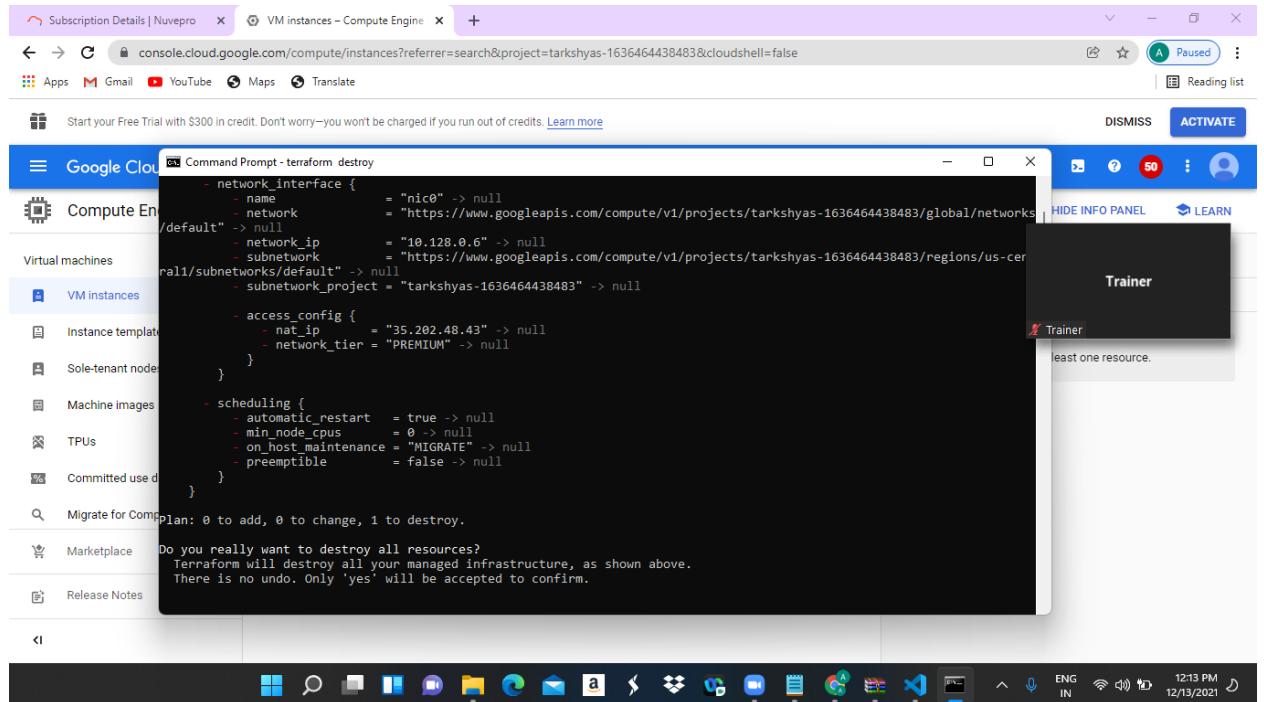
The sidebar on the left lists:

- Virtual machines
- VM instances (selected)
- Instance templates
- Sole-tenant nodes
- Machine images
- TPUs
- Committed use discounts
- Migrate for Compute Engine...
- Marketplace
- Release Notes

The main area shows a table of VM instances:

Filter	Status	Name	Zone	Recommendations	In use	Connect
	✓	terraform-instance	us-central1-c			SSH

A modal dialog box titled "Select an instance" is open on the right, showing the "Trainer" instance. It includes sections for "PERMISSIONS" and a note: "Please select at least one resource.".



b.Ansible

Shell->install ansible,request google auth->upload json key file+yml file->run

Home - tarkshyas-1636464438483 - Home | Nuvepro console.cloud.google.com/home/dashboard?project=tarkshyas-1636464438483&cloudshell=true

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DASHBOARD ACTIVITY RECOMMENDATIONS CUSTOMIZE

Project info

- Project name: tarkshyas-1636464438483
- Project number: 1046079317920
- Project ID: tarkshyas-1636464438483

API APIs

Requests (requests/sec)

2.0s 1.5s

Google Cloud Platform status

Google Cloud SQL
Global: Issues with Cloud SQL for MySQL instance migration to 5.7 when source databases have `gtid_mode` set to ON.
Began at 2021-12-07 (12:44:21)
All times are US/Pacific

CLOUD SHELL Terminal (tarkshyas-1636464438483) +

```
config file = None
configured module search path = [u'/home/tsgcp_user04/.ansible/plugins/modules', u'/usr/share/ansible/plugins/modules']
ansible python module location = /home/tsgcp_user04/.local/lib/python2.7/site-packages/ansible
executable location = /home/tsgcp_user04/.local/bin/ansible
python version = 2.7.16 (default, Oct 10 2019, 22:02:15) [GCC 8.3.0]
tsgcp_user04@cloudshell:~ (tarkshyas-1636464438483)$ pip install requests google-auth
*****
Python 2 is deprecated. Upgrade to pip3 as soon as possible.
See https://cloud.google.com/python/docs/python2-sunset

To suppress this warning, create an empty ~/.cloudshell/no-pip-warning file.
The command will automatically proceed in 5 seconds or on any key.
*****
```

11:52 AM 12/13/2021 ENG IN

Home - tarkshyas-1636464438483 - Home | Nuvepro console.cloud.google.com/home/dashboard?project=tarkshyas-1636464438483&cloudshell=true

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DASHBOARD ACTIVITY RECOMMENDATIONS CUSTOMIZE

Project info

- Project name: tarkshyas-1636464438483
- Project number: 1046079317920
- Project ID: tarkshyas-1636464438483

API APIs

Requests (requests/sec)

2.0s 1.5s

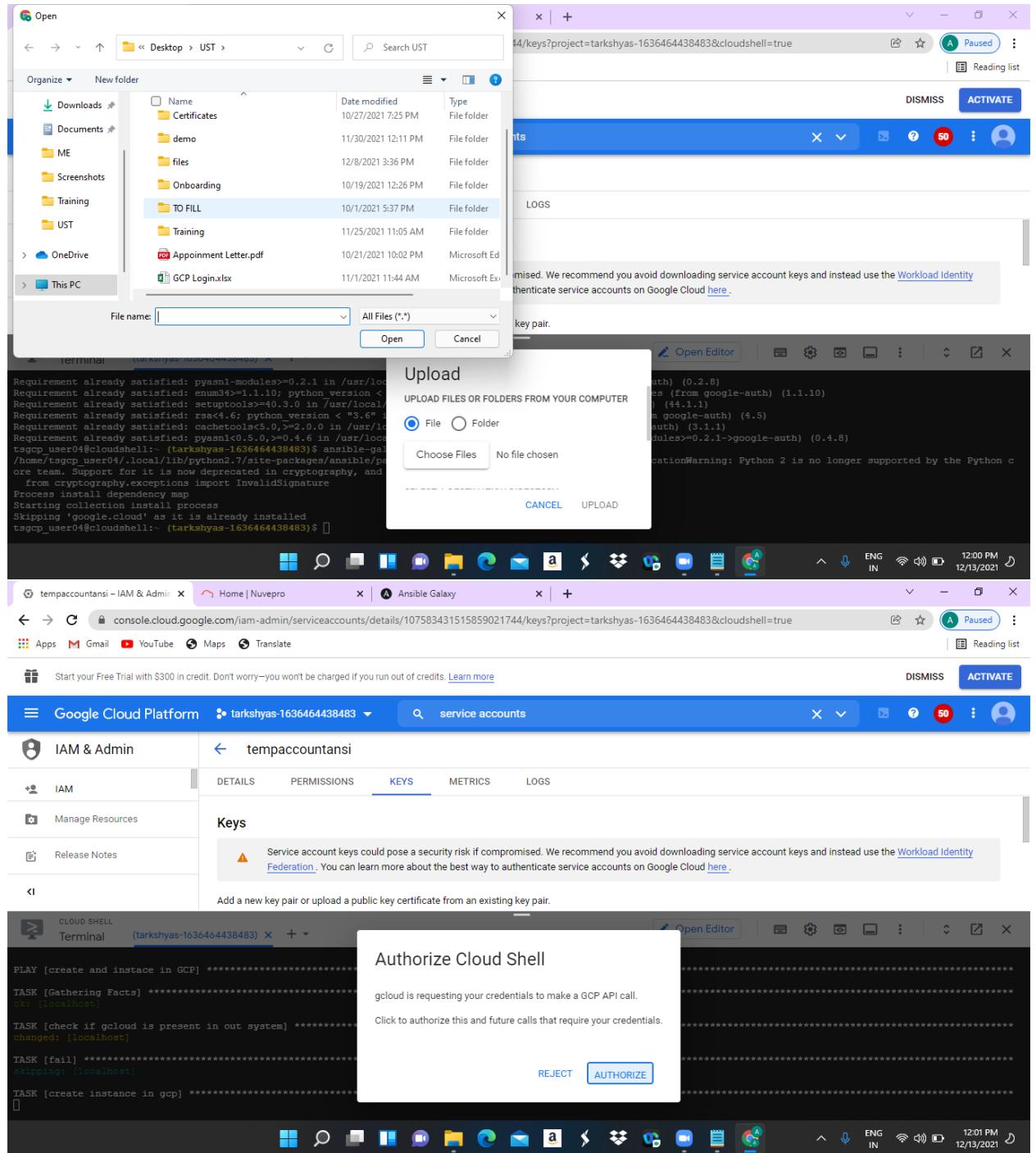
Google Cloud Platform status

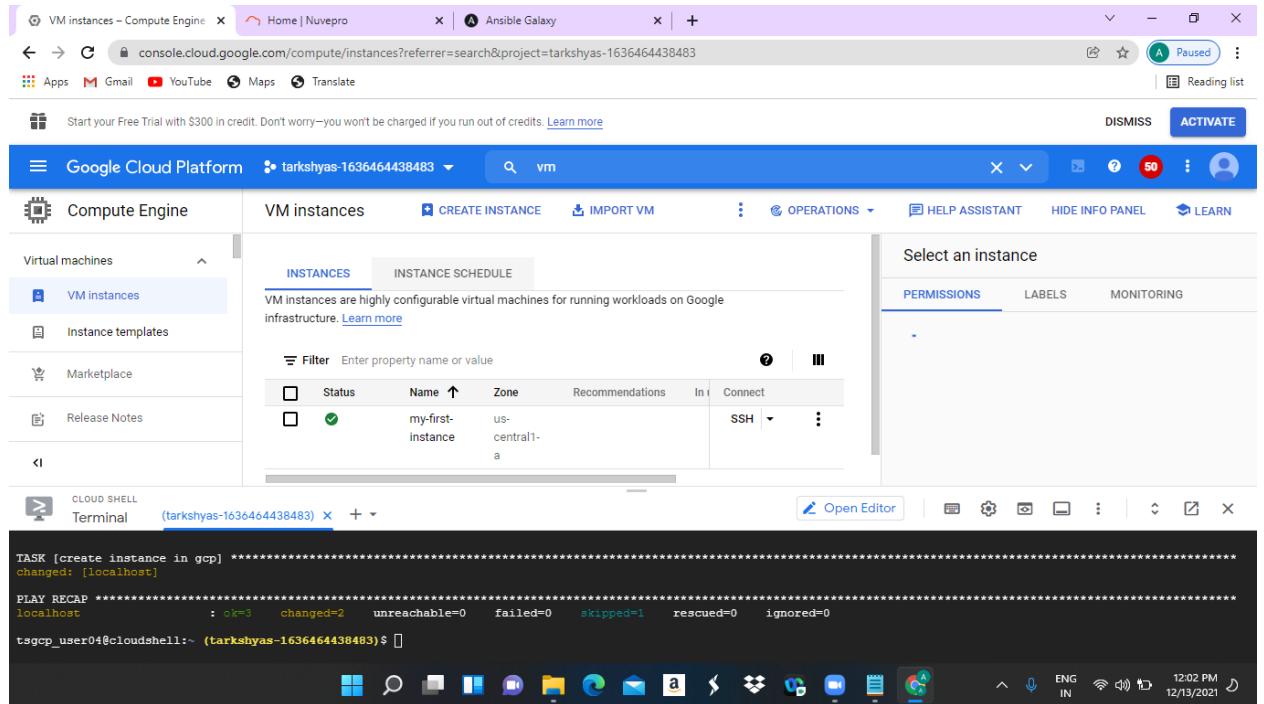
Google Cloud SQL
Global: Issues with Cloud SQL for MySQL instance migration to 5.7 when source databases have `gtid_mode` set to ON.
Began at 2021-12-07 (12:44:21)
All times are US/Pacific

CLOUD SHELL Terminal (tarkshyas-1636464438483) +

```
Requirement already satisfied: requests in /usr/local/lib/python2.7/dist-packages (2.26.0)
Requirement already satisfied: google-auth in /usr/local/lib/python2.7/dist-packages (2.3.3)
Requirement already satisfied: urllib3<1.27,>=1.21.1 in /usr/local/lib/python2.7/dist-packages (from requests) (1.26.7)
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python2.7/dist-packages (from requests) (2021.10.8)
Requirement already satisfied: idna<3,>=2.5; python_version < "3" in /usr/local/lib/python2.7/dist-packages (from requests) (2.10)
Requirement already satisfied: chardet<5,>=3.0.2; python_version < "3" in /usr/local/lib/python2.7/dist-packages (from requests) (4.0.0)
Requirement already satisfied: six>=1.9.0 in /usr/local/lib/python2.7/dist-packages (from google-auth) (1.16.0)
Requirement already satisfied: pyasn1-modules==0.2.1 in /usr/local/lib/python2.7/dist-packages (from google-auth) (0.2.8)
Requirement already satisfied: enum34==1.1.10; python_version < "3.4" in /usr/local/lib/python2.7/dist-packages (from google-auth) (1.1.10)
Requirement already satisfied: setuptools=>40.3.0 in /usr/local/lib/python2.7/dist-packages (from google-auth) (44.1.1)
Requirement already satisfied: rsa<4.6; python_version < "3.6" in /usr/local/lib/python2.7/dist-packages (from google-auth) (4.5)
Requirement already satisfied: cachetools<5.0,>=2.0.0 in /usr/local/lib/python2.7/dist-packages (from google-auth) (5.1.1)
Requirement already satisfied: pyasn1<0.5.0,>=0.4.6 in /usr/local/lib/python2.7/dist-packages (from pyasn1-modules>=0.2.1->google-auth) (0.4.8)
tsgcp_user04@cloudshell:~ (tarkshyas-1636464438483)$ ansible -galaxy collection install google.cloud
```

11:53 AM 12/13/2021 ENG IN





9. Create a Linux VM and host a sample website given in below link:

<https://github.com/learning-zone/website-templates/tree/master/above-educational-bootstrap-responsive-template>

Create VM instance->SSH connect->following commands

```
>sudo su >apt-get install apache2 >service httpd status>ls /var/www>ls
/var/www/html/index.html >give the site > check on SSH again.
```

Subscription Details | Nuvepro

VM instances – Compute Engine

console.cloud.google.com/compute/instances?onCreate=true&project=tarkshyas-1638768743382

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Google Cloud Platform tarkshyas-1638768743382 Search products and resources

Compute Engine VM instances CREATE INSTANCE IMPORT VM OPERATIONS HELP ASSISTANT HIDE INFO PANEL LEARN

Virtual machines VM instances Instance templates Sole-tenant nodes Machine images TPUs Committed use discounts Migrate for Compute Engi... Marketplace Release Notes

INSTANCES INSTANCE SCHEDULE

VM instances are highly configurable virtual machines for running workloads on Google infrastructure. [Learn more](#)

Filter Enter property name or value

Status	Name	Zone	Recommendations	In use	Connect
Green checkmark	instance-3	asia-south1-c		SSH	⋮
Blue arrow	instance-4				⋮

Select an instance

PERMISSIONS LABELS MONITORING

Please select at least one resource.

SSH: instance-4 @ tarkshyas-1638768743382 - Google Chrome

ssh.cloud.google.com/projects/tarkshyas-1638768743382/zones/us-central1-a/instances/instance-4?authuser=0&hl=en_US&projectNu...

Connecting... Establishing connection to SSH server... You can drastically improve your key transfer times by migrating to [OS Login](#).

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OPTIONS HELP ASSISTANT HIDE INFO PANEL LEARN

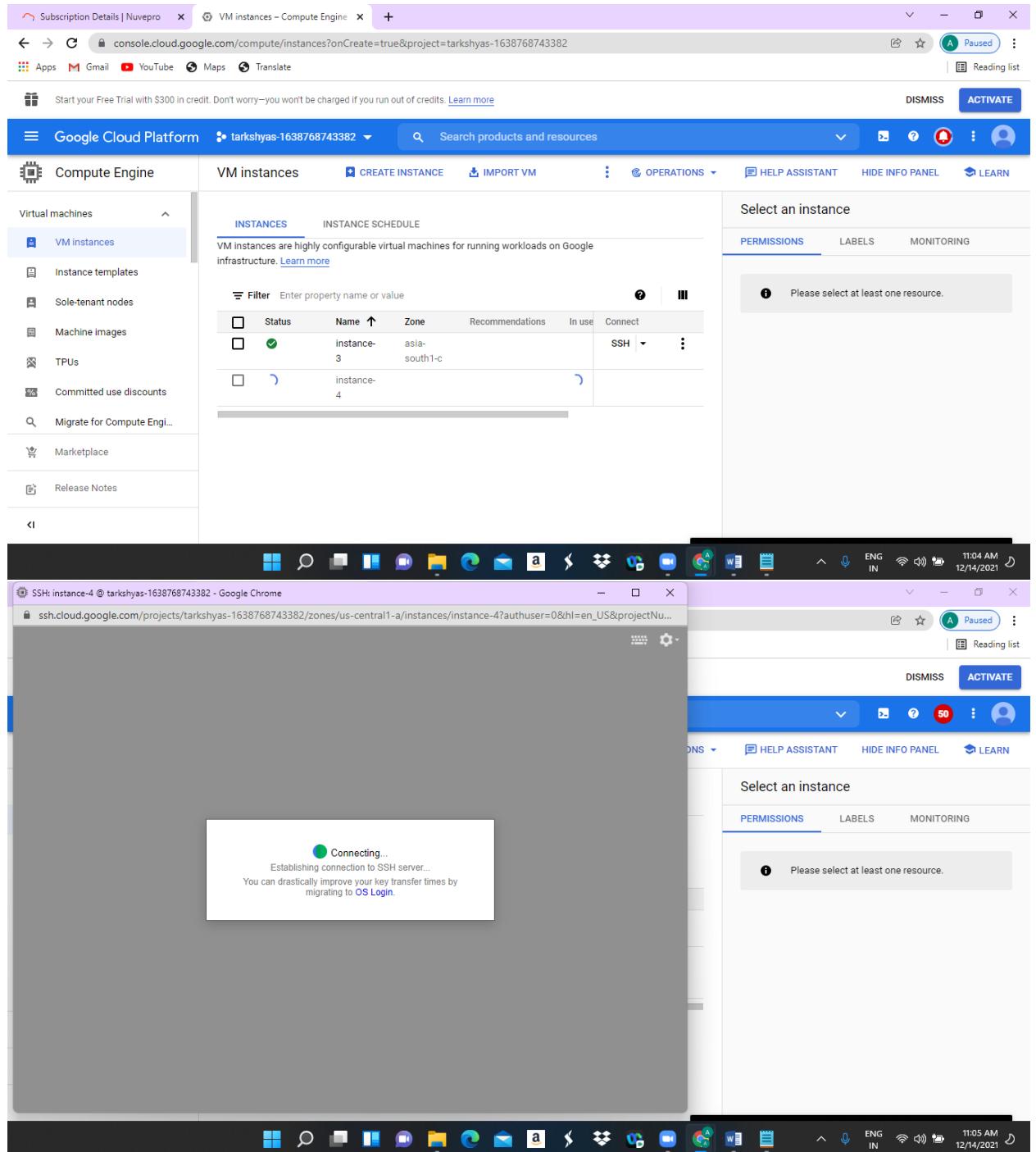
Select an instance

PERMISSIONS LABELS MONITORING

Please select at least one resource.

11:04 AM 12/14/2021

11:05 AM 12/14/2021



Subscription Details | Nuvepro | VM instances – Compute Engine | Apache2 Ubuntu Default Page: It

Not secure | 34.121.173.42

Apps Gmail YouTube Maps Translate

Apache2 Ubuntu Default Page

It works!

This is the default welcome page used to test the correct operation of the Apache2 server after installation on Ubuntu systems. It is based on the equivalent page on Debian, from which the Ubuntu Apache packaging is derived. 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

Ubuntu's Apache2 default configuration is different from the upstream default configuration, and split into several files optimized for interaction with Ubuntu 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 Ubuntu systems is as follows:

```
/etc/apache2/
|-- apache2.conf
|   '-- ports.conf
|-- mods-enabled
|   '-- *.Load
|       '-- *.conf
|-- conf-enabled
|   '-- *.conf
|-- sites-enabled
```

root@instance-4:/home/tsgcp_user04 - Google Chrome

ssh.cloud.google.com/projects/tarkshyas-1638768743382/zones/us-central1-a/instances/instance-4?authuser=0&hl=en_US&projectNu...

* Documentation: <https://help.ubuntu.com>
* Management: <https://landscape.canonical.com>
* Support: <https://ubuntu.com/advantage>

System information as of Tue Dec 14 05:35:36 UTC 2021

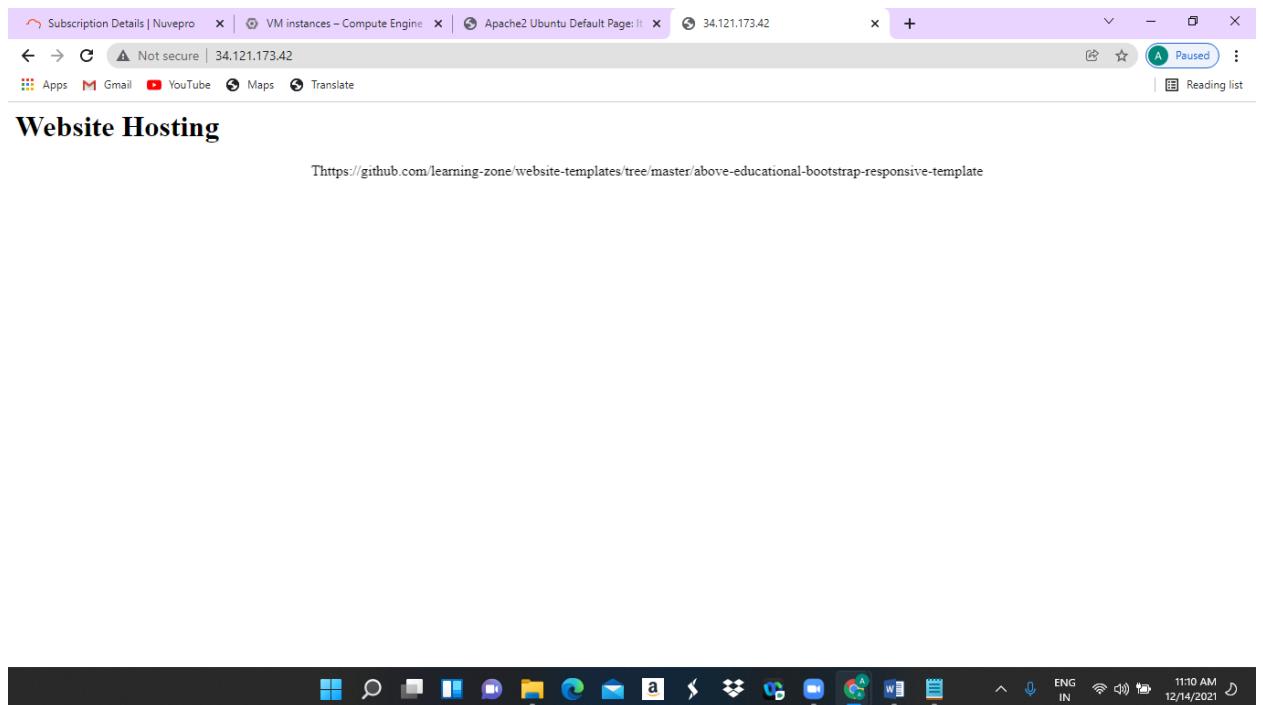
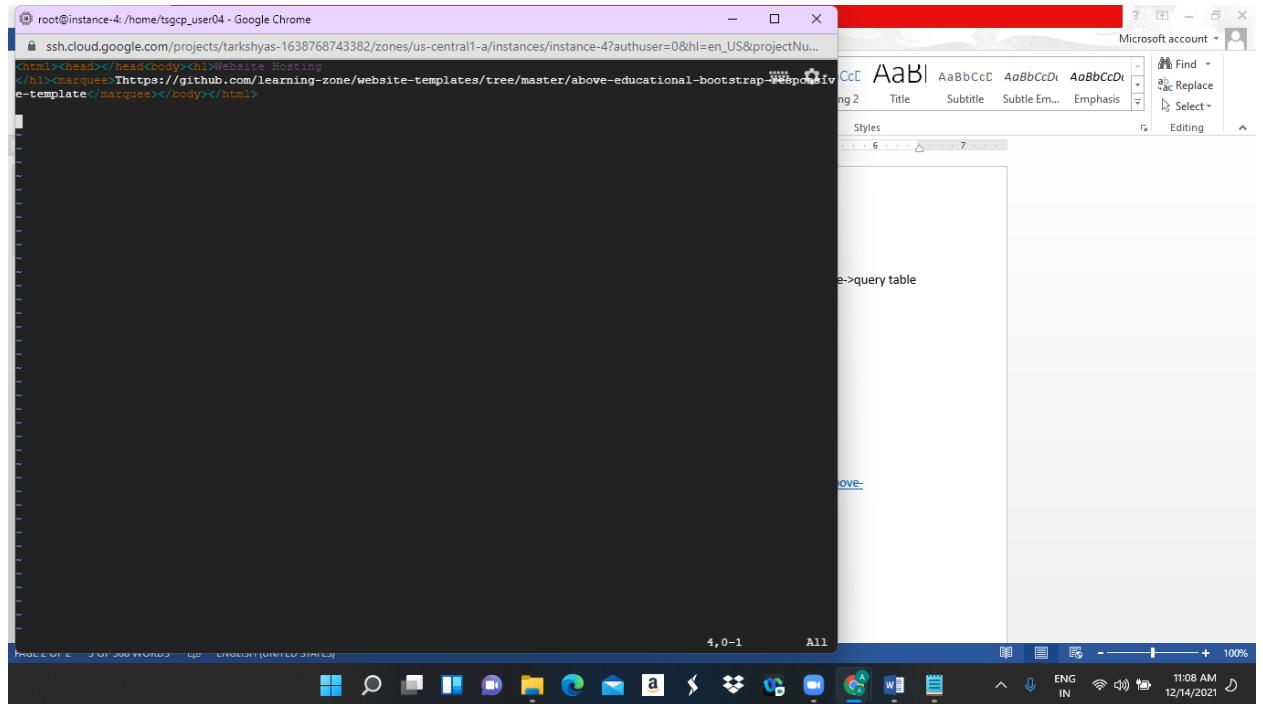
```
System load: 0.28 Processes: 123
Usage of /: 17.2% of 9.52GB Users logged in: 0
Memory usage: 5% IP address for ens4: 10.128.0.4
Swap usage: 0%
```

0 updates can be applied immediately.

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

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by applicable law.

```
tsgcp_user04@instance-4:~$ sudo su
root@instance-4:/home/tsgcp_user04# apt-get install apache2
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following package was automatically installed and is no longer required:
libnuma1
Use 'sudo apt autoremove' to remove it.
The following additional packages will be installed:
apache2-bin apache2-data apache2-utils libaprutil1 libaprutil1-dbd-sqlite3 libaprutil1-ldap liblua5.2-0
ssl-cert
Suggested packages:
www-browser apache2-doc apache2-suexec-pristine | apache2-suexec-custom openssl-blacklist
The following NEW packages will be installed:
apache2 apache2-data apache2-utils libaprutil1 libaprutil1-dbd-sqlite3 libaprutil1-ldap
liblua5.2-0 ssl-cert
0 upgraded, 10 newly installed, 0 to remove and 0 not upgraded.
Need to get 1730 kB of archives.
After this operation, 6994 kB of additional disk space will be used.
Do you want to continue? [Y/n] ■
```



10. Host a website given below using App Engine standard env.

<https://github.com/GoogleCloudPlatform/python-docs-samples/tree/main/appengine/standard/cloudsql>

The screenshot shows a web browser window with the following details:

- Address Bar:** console.cloud.google.com/appengine?project=tarkshyas-1638768743382&serviceld=default&cloudshell=true
- Header:** Google Cloud Platform - App Engine - tarkshyas - python-docs-samples/main.py
- Content Area:** Terminal window titled "Terminal (tarkshyas-1638768743382)". It displays a command-line session:

```
sudo apt-get install google-cloud-sdk-app-engine-python
tsgcpr user0@cloudshell:~ (tarkshyas-1638768743382)$ sudo apt-get install google-cloud-sdk-app-engine-python
*****
You are running apt-get inside of Cloud Shell. Note that your Cloud Shell
machine is ephemeral and no system-wide change will persist beyond session end.

To suppress this warning, create an empty ~/.cloudshell/no-apt-get-warning file.
The command will automatically proceed in 5 seconds or on any key.

Visit https://cloud.google.com/shell/help for more information.
*****
Reading package lists... Done
Building dependency tree
Reading state information... Done
google-cloud-sdk-app-engine-python is already the newest version (365.0.1-0).
0 upgraded, 0 newly installed, 0 to remove and 9 not upgraded.
tsgcpr user0@cloudshell:~ (tarkshyas-1638768743382)$ git clone 'https://github.com/GoogleCloudPlatform/python-docs-samples'
fatal: destination path 'python-docs-samples' already exists and is not an empty directory.
tsgcpr user0@cloudshell:~ (tarkshyas-1638768743382)$ python-docs-samples/appengine/standard/cloudsql/main.py /
-bash: python-docs-samples/appengine/standard/cloudsql/main.py: Permission denied
tsgcpr user0@cloudshell:~ (tarkshyas-1638768743382)$ python-docs-samples/appengine/standard/cloudsql/
-bash: python-docs-samples/appengine/standard/cloudsql/: Is a directory
tsgcpr user0@cloudshell:~ (tarkshyas-1638768743382)$ cd python-docs-samples/appengine/standard/cloudsql/
tsgcpr user0@cloudshell:~/python-docs-samples/appengine/standard/cloudsql (tarkshyas-1638768743382)$
```
- Sidebar:** "Enable App Engine in a Cloud project" tutorial.
 - Select a project, or create a new one.
 - To open Cloud Shell, click **Cloud Shell**. Show me
 - While these steps show you how to work in Cloud Shell, you can use a similar process when you work in your local environment.
 - Enable App Engine:

```
$ gcloud app create
```

You can use the gcloud command-line tool to manage your project's resources from the command line or in scripts that you create.
- Bottom:** Navigation buttons: Previous, Step 1 of 6, Next.

The screenshot shows a web browser with three tabs open:

- Subscription Details | Nuvepro
- Dashboard - App Engine - tarkshyas-1638768743382
- python-docs-samples/main.py at python-docs-samples · GitHub

The main content area displays the Google Cloud Platform interface for the project "tarkshyas-1638768743382". A sidebar titled "Enable App Engine in a Cloud project" provides step-by-step instructions:

- Select a project, or [create a new one.](#)
- To open Cloud Shell, click **Cloud Shell. Show me**. While these steps show you how to work in Cloud Shell, you can use a similar process when you work in your local environment.
- Enable App Engine:

```
$ gcloud app create
```

You can use the `gcloud` command-line tool to manage your project's resources from the command line or in scripts that you create.

At the bottom of the terminal window, the command `gcloud app browse` is run, resulting in the URL `https://tarkshyas-1638768743382.wl.r.appspot.com`.

11. Host a website given below using App Engine flexible env.

<https://github.com/GoogleCloudPlatform/python-docs-samples/tree/main/appengine/flexible/djangocloudsql>

The screenshot shows a web browser with three tabs open:

- Subscription Details | Nuvepro
- Settings - App Engine - tarkshyas-1638768743382
- Quickstart for Python 3 in the App Engine flexible environment

The main content area displays the Google Cloud Platform interface for the project "tarkshyas-1638768743382". A sidebar titled "Enable App Engine in a Cloud project" provides step-by-step instructions:

- Select a project, or [create a new one.](#)
- To open Cloud Shell, click **Cloud Shell. Show me**. While these steps show you how to work in Cloud Shell, you can use a similar process when you work in your local environment.
- Enable App Engine:

```
$ gcloud app create
```

You can use the `gcloud` command-line tool to manage your project's resources from the command line or in scripts that you create.

At the bottom of the terminal window, the command `git clone https://github.com/GoogleCloudPlatform/python-docs-samples/tree/main/appengine/flexible/djangocloudsql` is run.

Subscription Details | Nuvepro Settings - App Engine - tarkshyas-1638768743382 Quickstart for Python 3 in the App Engine

console.cloud.google.com/appengine/settings?project=tarkshyas-1638768743382&cloudshell=true

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Google Cloud Platform tarkshyas-1638768743382 app engine

CLOUD SHELL Terminal (tarkshyas-1638768743382) + Open Editor

```
Welcome to Cloud Shell!! Type "help" to get started.
Your Cloud Platform project in this session is set to tarkshyas-1638768743382.
Use `gcloud config set project [PROJECT_ID]` to change to a different project.
tsgcp user04@cloudshell:~ (tarkshyas-1638768743382)$ git clone https://github.com/GoogleCloudPlatform/python-docs-samples
fatal: destination path 'python-docs-samples' already exists and is not an empty directory.
tsgcp user04@cloudshell:~ (tarkshyas-1638768743382)$ ls
add-logging-agent-repo.sh  cloud-bigtable
appengine  index.html
tempkey.json
tsgcp user04@cloudshell:~ (tarkshyas-1638768743382)$ gcloud app deploy
tsgcp user04@cloudshell:~/python-docs-samples$ gcloud app deploy
tsgcp user04@cloudshell:~/python-docs-samples$
```

Authorize Cloud Shell

gcloud is requesting your credentials to make a GCP API call.

Click to authorize this and future calls that require your credentials.

REJECT AUTHORIZE

Enable App Engine in a Cloud project

1. Select a project, or [create a new one](#).
2. To open Cloud Shell, click [Cloud Shell](#). [Show me](#)
3. Enable App Engine:

\$ gcloud app create

You can use the gcloud command-line tool to manage your project's resources from the command line or in scripts that you create.

Previous Step 1 of 6 Next

Subscription Details | Nuvepro Dashboard - App Engine - tarkshyas-1638768743382 python-docs-samples/main.py

console.cloud.google.com/appengine?project=tarkshyas-1638768743382&serviceId=default&cloudshell=true

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Google Cloud Platform tarkshyas-1638768743382 app engine

App Engine Dashboard HIDE INFO PANEL

CLOUD SHELL Terminal (tarkshyas-1638768743382) + Open Editor

```
target service: [default]
target version: [20211214t095215]
target url: [https://tarkshyas-1638768743382.wl.r.appspot.com]
target service account: [App Engine default service account]

Do you want to continue (Y/n)? y
Beginning deployment of service [default]...
Uploading 1 file to Google Cloud Storage
100%
100%
File upload done.
Updating service [default]...done.
Setting traffic split for service [default]...done.
Deployed service [default] to [https://tarkshyas-1638768743382.wl.r.appspot.com]

You can stream logs from the command line by running:
$ gcloud app logs tail -s default

To view your application in the web browser run:
$ gcloud app browse
tsgcp user04@cloudshell:~/python-docs-samples/appengine/standard/cloudsql (tarkshyas-1638768743382)$ gcloud app browse
Did not detect your browser. Go to this link to view your app:
https://tarkshyas-1638768743382.wl.r.appspot.com
tsgcp user04@cloudshell:~/python-docs-samples/appengine/standard/cloudsql (tarkshyas-1638768743382)$
```

Enable App Engine in a Cloud project

1. Select a project, or [create a new one](#).
2. To open Cloud Shell, click [Cloud Shell](#). [Show me](#)
3. Enable App Engine:

\$ gcloud app create

You can use the gcloud command-line tool to manage your project's resources from the command line or in scripts that you create.

Previous Step 1 of 6 Next

12. BigQuery Basics

The screenshot shows the Google Cloud Platform BigQuery Editor interface. The top navigation bar includes tabs for 'Subscription Details | Nuvepro', 'BigQuery – tarkshyas-1636464438156', and 'stackoverflow – BigQuery – tarks...'. The main content area displays the 'sub_tab' table from the 'demo_10' dataset. The 'SCHEMA' tab is selected, showing a table schema with one row: 'Table does not have a schema.' Below the schema are buttons for 'EDIT SCHEMA' and 'VIEW ROW ACCESS POLICIES'. The bottom navigation bar includes links for 'PERSONAL HISTORY', 'PROJECT HISTORY', and 'SAVED QUERIES'.

The screenshot shows the Google Cloud Platform BigQuery Editor interface. The top navigation bar includes tabs for 'Subscription Details | Nuvepro', 'BigQuery – tarkshyas-1636464438156', and 'stackoverflow – BigQuery – tarks...'. The main content area displays the 'stackoverflow' dataset. The 'Dataset info' section shows details such as Dataset ID (bigquery-public-data.stackoverflow), Created (Sep 8, 2016, 2:06:49 AM UTC+5:30), Default table expiration (Never), Last modified (Mar 21, 2019, 2:54:19 AM UTC+5:30), Location (US), and Description. Buttons for 'CREATE TABLE', 'SHARING', 'COPY', and 'DELETE' are available. The bottom navigation bar includes links for 'PERSONAL HISTORY', 'PROJECT HISTORY', and 'SAVED QUERIES'.

Subscription Details | Nuvepro | SQL workspace - BigQuery - tarkshyas-1636464438156 | SQL workspace - BigQuery - tarkshyas-1636464438156 | + | console.cloud.google.com/bigquery?page=queryresults&project=tarkshyas-1636464438156&j=bq:US:bquxjob_6abbe83_17db3857c5c | Apps Gmail YouTube Maps Translate | Paused | DISMISS ACTIVATE

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Google Cloud Platform tarkshyas-1636464438156 Search products and resources

FEATURES & INFO SHORTCUT DISABLE EDITOR TABS

Explorer + ADD DATA

EDITOR *UNSAVED 2 *UNSAVED 3 *UNSAVED 4 *UNSAVED 5 COMPOSE NEW QUERY

RUN SAVE SCHEDULE MORE

```
1 SELECT flattened_tags,COUNT(*) tag_count from
2 (SELECT split(tags,'|') tags FROM `bigquery-public-data.stackoverflow.stackoverflow_posts`
3 where Extract(YEAR from creation_date) >= 2008)
```

Query results SAVE RESULTS EXPLORE DATA

Query complete (1.4 sec elapsed, 574.5 MB processed)

Job information Results JSON Execution details

Row	flattened_tags	tag_count
1	19171371	
2	javascript	1143864
3	java	1086506
4	c#	962755
5	etcetera	

PERSONAL HISTORY PROJECT HISTORY SAVED QUERIES

Sign out Subscription Details | Nuvepro | SQL workspace - BigQuery - tarkshyas-1635697466093 | Search | Kaggle | + | console.cloud.google.com/bigquery?referrer=search&project=tarkshyas-1635697466093&j=bqus-west2:bquxjob_f7a7197_17d50a14c01&page=queryresults&ws=1... | Apps Gmail YouTube Maps Translate | Paused | DISMISS ACTIVATE

Google Cloud Platform tarkshyas-1635697466093 bi

FEATURES & INFO SHORTCUT DISABLE EDITOR TABS

EDITOR 2 *UNSAVED 3 *UNSAVED 4 *UNSAVED 5 *UNSAVED 6 COMPOSE NEW QUERY

RUN SAVE SCHEDULE MORE

```
1 SELECT
2   rated,
3   last_move_at, COUNT(id) AS opening_ply
4   FROM
5   `tarkshyas-1635697466093.Chessgame.gamedata`
6   GROUP BY
```

Query results SAVE RESULTS EXPLORE DATA

Query complete (0.0 sec elapsed, cached)

Job information Results JSON

Row	rated	last_move_at	opening_ply
1	true	1.48E12	871
2	false	1.49E12	420
3	true	1.46E12	605

Rows per page: 100 1 - 100 of 412 First page < > 198910-Archana...

JOB HISTORY QUERY HISTORY SAVED QUERIES

198910-Archana... ENG IN 11:58 AM 11/24/2021

The screenshot shows the Google Cloud Platform BigQuery interface. The left sidebar displays pinned projects, including 'tarkshyas-1635697477552' which contains datasets like 'chess', 'chessgame', and 'data'. The main area shows the 'data' dataset's schema, which includes fields: id (STRING, NULLABLE), rated (BOOLEAN, NULLABLE), created_at (FLOAT, NULLABLE), last_move_at (FLOAT, NULLABLE), turns (INTEGER, NULLABLE), victory_status (STRING, NULLABLE), winner (STRING, NULLABLE), and increment_code (STRING, NULLABLE). Below the schema, tabs for 'JOB HISTORY', 'QUERY HISTORY', and 'SAVED QUERIES' are visible. A modal window titled '146294-Nethaji' is partially visible on the right. The bottom section shows a query history tab with a single entry:

```
1 select * from `tarkshyas-1635697473426.hacker_news.hacker_news_cleaned_partitioned`  
2 where news_date between '2016-01-01' and '2016-05-30' and author='nkurz';
```

The status bar at the bottom indicates the query will process 17.1 MB when run.