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7.1a Terraform AWS Guestbook

4. Launching configuration

Take a screenshot showing the completion of the command including its output

```
+ maintenance_options (known after apply)
+ metadata_options (known after apply)
+ network_interface (known after apply)
+ private_dns_name_options (known after apply)
+ root_block_device (known after apply)
}

Plan: 1 to add, 0 to change, 0 to destroy.

Changes to Outputs:
+ ec2instance = (known after apply)

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

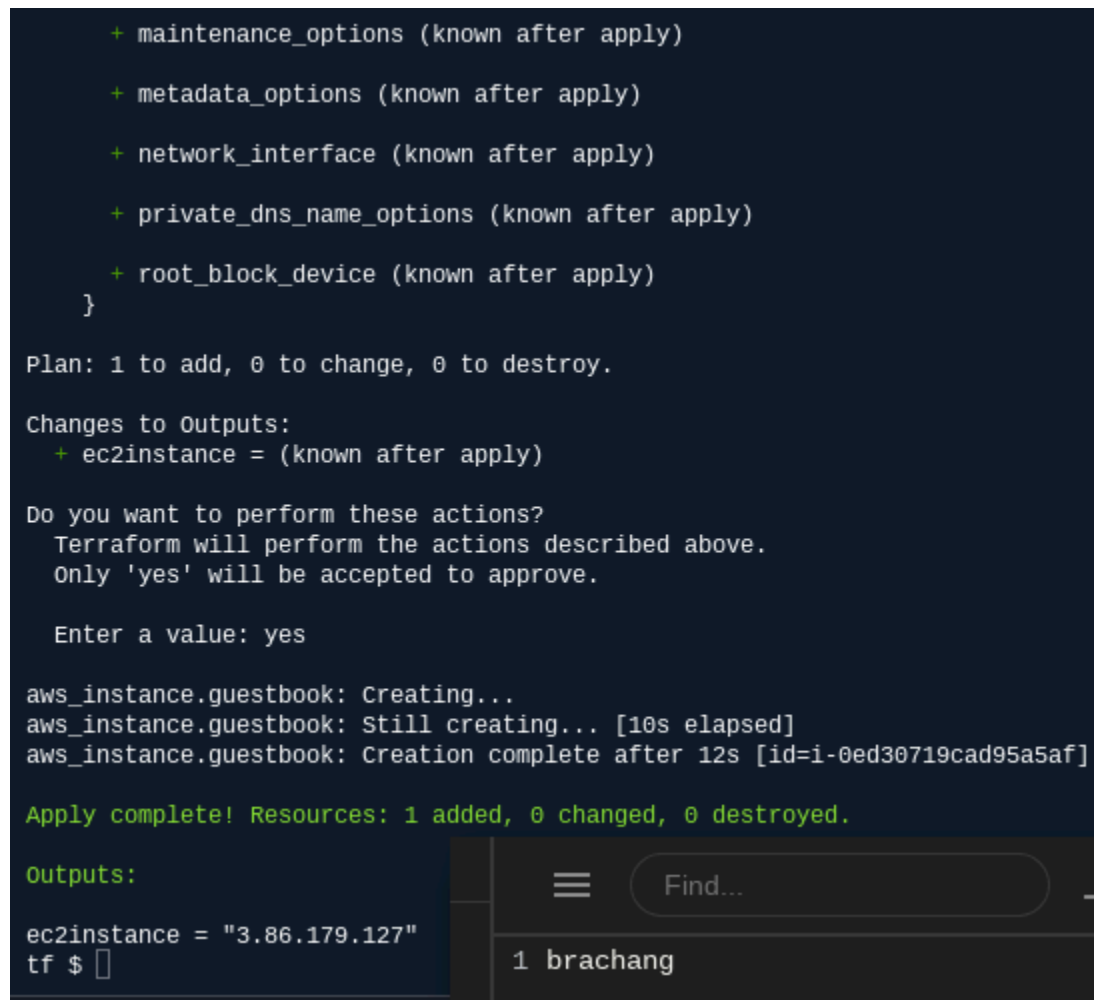
  Enter a value: yes

aws_instance.guestbook: Creating...
aws_instance.guestbook: Still creating... [10s elapsed]
aws_instance.guestbook: Creation complete after 12s [id=i-0ed30719cad95a5af]

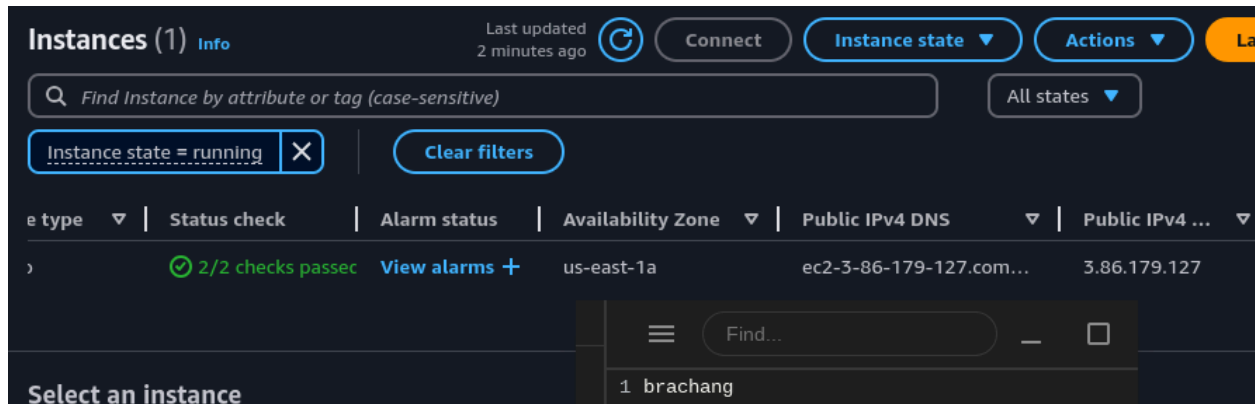
Apply complete! Resources: 1 added, 0 changed, 0 destroyed.

Outputs:

ec2instance = "3.86.179.127"
tf $
```

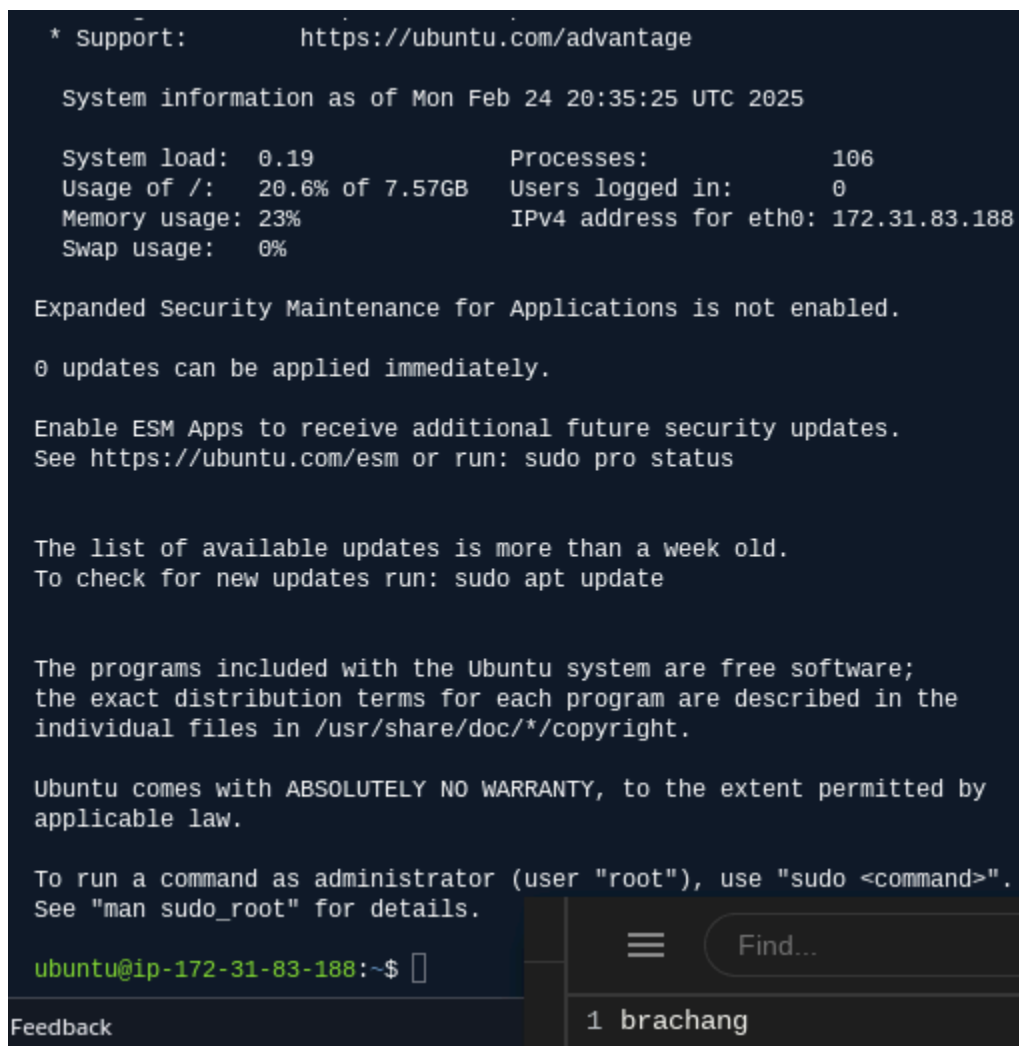


Take a screenshot that includes the VM's IP addresses



6. Adding ssh access

Take a screenshot of the successful ssh login from Cloud Shell.



7. Adding the Guestbook application

Take a screenshot of the output of the command that includes the IP address of the instance

```
Changes to Outputs:
+ ec2instance = (known after apply)

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

aws_key_pair.kp: Creating...
aws_security_group.sg-guestbook: Creating...
aws_key_pair.kp: Creation complete after 0s [id=guestbook-key]
aws_security_group.sg-guestbook: Creation complete after 2s [id=sg-0a202c3c4084d2517]
aws_instance.guestbook: Creating...
aws_instance.guestbook: Still creating... [10s elapsed]
aws_instance.guestbook: Creation complete after 13s [id=i-00a6c351fb03d578e]

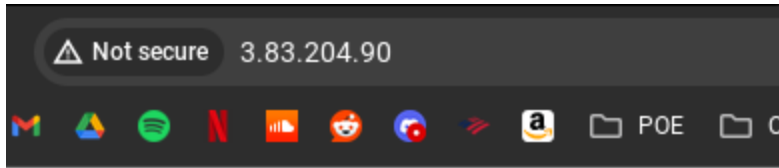
Apply complete! Resources: 3 added, 0 changed, 0 destroyed.

Outputs:
ec2instance = "3.83.204.90"
tf $
```

```
ubuntu@ip-172-31-91-219:~$ ps auxww | grep gunicorn
root      7272  0.0  2.3 30948 22920 ?        S    21:31   0:00 /usr/bin/python3 /usr/bin/gunicorn --bind :80 --workers 1 --threads 8 app:app
root      7274  0.0  2.9 39544 29576 ?        S    21:31   0:00 /usr/bin/python3 /usr/bin/gunicorn --bind :80 --workers 1 --threads 8 app:app
ubuntu    7421  0.0  0.0   8168   720 pts/0    S+   21:41   0:00 grep --color=auto gunicorn
ubuntu@ip-172-31-91-219:~$
```

8. View the Guestbook

Take a screenshot of the Guestbook including the URL with the entry in it.



Guestbook

Sign [here](#)

Entries

Bradley Chang <brachang@pdx.edu>
signed on 2025-02-24
Hello Terraform on AWS!

7.1b: Terraform GCP Guestbook

4. Launching configuration

Take a screenshot that includes the VM's IP addresses

cloud-Chang-brachang

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Search

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VM instances

CREATE INSTANCE

IMPORT VM

REFRESH

LEARN

INSTANCES

OBSERVABILITY

INSTANCE SCHEDULES

VM instances

Filter Enter property name or value

?

⋮

<input type="checkbox"/>	Status	Name ↑	Zone	Recommendations	In use by	Internal IP	External IP	Network	Connect
<input type="checkbox"/>	🔍	course-vm	us-west1-b			10.138.0.2 (nic0)		default	SSH ▾ ⋮
<input type="checkbox"/>	✅	tf-lab-vm	us-west1-a			10.138.0.19 (nic0)		default	SSH ▾ ⋮

5. Adding an external IP address

Take a screenshot showing the completion of the command including its output

```
+ subnetwork_project      = (known after apply)

+ access_config {
+   nat_ip   = (known after apply)
+   network_tier = (known after apply)
+ }
}

Plan: 2 to add, 0 to change, 0 to destroy.

Changes to Outputs:
+ ip = (known after apply)

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_address.static: Creating...
google_compute_address.static: Still creating... [10s elapsed]
google_compute_address.static: Creation complete after 11s [id=projects/cloud-chang-brachang/regions/us-west1/addresses/ipv4-address]
google_compute_instance.default: Creating...
google_compute_instance.default: Still creating... [10s elapsed]
google_compute_instance.default: Still creating... [20s elapsed]
google_compute_instance.default: Creation complete after 27s [id=projects/cloud-chang-brachang/zones/us-west1-a/instances/tf-lab-vm]

Apply complete! Resources: 2 added, 0 changed, 0 destroyed.

Outputs:
ip = "34.19.0.220"
brachang@cloudshell:~/tf (cloud-chang-brachang)$
```

Take a screenshot that includes the VM's IP addresses

cloud-Chang-brachang

Search (/) for resources, docs, products, and more

Search

VM instances

CREATE INSTANCE

IMPORT VM

REFRESH

INSTANCES

OBSERVABILITY

INSTANCE SCHEDULES

VM instances

Filter Enter property name or value

<input type="checkbox"/>	Status	Name ↑	Zone	Recommendations	In use by	Internal IP	External IP	Network	Connect
<input type="checkbox"/>		course-vm	us-west1-b			10.138.0.2 (nic0)		default	SSH
<input type="checkbox"/>		tf-lab-vm	us-west1-a			10.138.0.20 (nic0)	34.19.0.220 (nic0)	default	SSH

6. Adding ssh access

Take a screenshot of the successful ssh login from Cloud Shell.

```
Warning: Permanently added '34.19.0.220' (ED25519) to the list of known hosts.
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.0-1075-gcp x86_64)

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

System information as of Mon Feb 24 23:05:04 UTC 2025

System load:  0.0               Processes:            101
Usage of /:   20.3% of 9.51GB   Users logged in:     0
Memory usage: 5%               IPv4 address for ens4: 10.138.0.20
Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

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

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

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.

brachang@tf-lab-vm:~$ █
```

7. Adding the Guestbook application

What resources are being added, changed, or destroyed?

The `google_compute_instance` is being replaced.

Here's everything that's being changed, added, or destroyed:

```
cloud-chang-brachang X + v X
Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
/- destroy and then create replacement

Terraform will perform the following actions:

# google_compute_instance.default must be replaced
/- resource "google_compute_instance" "default" {
  ~ cpu_platform      = "Intel Broadwell" -> (known after apply)
  ~ creation_timestamp = "2025-02-24T14:43:46.184-08:00" -> (known after apply)
  ~ current_status    = "RUNNING" -> (known after apply)
  ~ enable_display    = false -> null
  ~ id                = "projects/cloud-chang-brachang/zones/us-west1-a/instances/tf-lab-vm" -> (known after apply)
  ~ instance_id       = "7108802933962131662" -> (known after apply)
  ~ label_fingerprint = "vezUS-42LLM=" -> (known after apply)
  ~ labels             = {} -> null
  ~ metadata_fingerprint = "0-ypEWKG1B8=" -> (known after apply)
  + metadata_startup_script = <<-EOT # forces replacement
    #!/bin/bash
    apt update
    apt install -yq build-essential python3-pip gunicorn git
    pip install flask
    git clone https://github.com/wu4f/cs430-src /root/cs430-src
    cd /root/cs430-src/03.nginx.gunicorn.certbot
    gunicorn --bind :80 --workers 1 --threads 8 app:app
  EOT
  + min_cpu_platform = (known after apply)
  ~ name             = "tf-lab-vm"
  ~ resource_policies = [] -> null
  ~ self_link         = "https://www.googleapis.com/compute/v1/projects/cloud-chang-brachang/zones/us-west1-a/instances/tf-lab-vm" -> (known after apply)
  ~ tags              = [
    + "http-server",
  ]
  ~ tags_fingerprint = "42WmSpB8rSM=" -> (known after apply)
}
```

```
cloud-chang-brachang X + v X
~ boot_disk {
  ~ device_name      = "persistent-disk-0" -> (known after apply)
  ~ disk_encryption_key_sha256 = (known after apply)
  ~ kms_key_self_link = (known after apply)
  ~ source            = "https://www.googleapis.com/compute/v1/projects/cloud-chang-brachang/zones/us-west1-a/disks/tf-lab-vm" -> (known after apply)
}

# (2 unchanged attributes hidden)

~ initialize_params {
  ~ enable_confidential_compute = false -> null
  ~ image                       = "https://www.googleapis.com/compute/v1/projects/ubuntu-os-cloud/global/images/ubuntu-2004-focal-v20250213" -> "ubuntu-os-cloud/ubuntu-2004-focal-v20250213"
  ~ labels                     = {} -> (known after apply)
  ~ provisioned_iops           = 0 -> (known after apply)
  ~ provisioned_throughput     = 0 -> (known after apply)
  ~ resource_manager_tags      = {} -> null
  ~ resource_policies          = [] -> (known after apply)
  ~ size                       = 10 -> (known after apply)
  ~ type                       = "pd-standard" -> (known after apply)
}

~ network_interface {
  ~ internal_ipv6_prefix_length = 0 -> (known after apply)
  + ipv6_access_type            = (known after apply)
  + ipv6_address                = (known after apply)
  ~ name                       = "nic0" -> (known after apply)
  ~ network                    = "https://www.googleapis.com/compute/v1/projects/cloud-chang-brachang/global/networks/default" -> "default"
  ~ network_ip                 = "10.138.0.20" -> (known after apply)
  ~ queue_count                = 0 -> null
  ~ stack_type                 = "IPV4_ONLY" -> (known after apply)
  ~ subnetwork                 = "https://www.googleapis.com/compute/v1/projects/cloud-chang-brachang/regions/us-west1/subnetworks/default" -> (known after apply)
  ~ subnetwork_project         = "cloud-chang-brachang" -> (known after apply)
}
```



```
(cloud-chang-brachang) X + - X
- queue_count          = 0 -> null
- stack_type           = "IPV4_ONLY" -> (known after apply)
- subnetwork           = "https://www.googleapis.com/compute/v1/projects/cloud-chang-brachang/regions/us-west1/subnetworks/default" -> (known af
ter apply)
- subnetwork_project   = "cloud-chang-brachang" -> (known after apply)
- access_config {
  ~ network_tier = "PREMIUM" -> (known after apply)
    # (1 unchanged attribute hidden)
}
- scheduling {
  - automatic_restart = true -> null
  - availability_domain = 0 -> null
  - min_node_cpus     = 0 -> null
  - on_host_maintenance = "MIGRATE" -> null
  - preemptible       = false -> null
  - provisioning_model = "STANDARD" -> null
}
- shielded_instance_config {
  - enable_integrity_monitoring = true -> null
  - enable_secure_boot         = false -> null
  - enable_vtpm                = true -> null
}
}

Plan: 1 to add, 0 to change, 1 to destroy.

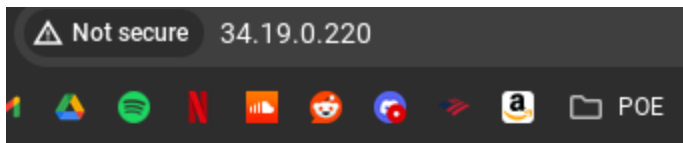
Note: You didn't use the -out option to save this plan, so Terraform can't guarantee to take exactly these actions if you run "terraform apply" now.
brachang@cloudshell:~/tf (cloud-chang-brachang)$
```

What part of the configuration forces a replacement to occur?

The metadata_startup_script forces a replacement

8. View the Guestbook

Take a screenshot of the Guestbook including the URL with the entry in it.



Guestbook

Sign [here](#)

Entries

Bradley Chang <brachang@pdx.edu>
signed on 2025-02-24
Hello Terraform on GCP!

07.2g: Kubernetes Guestbook

4. Create Kubernetes cluster

What is the name of the Instance Template dynamically generated to create the two nodes (VMs)?

gke-guestbook-default-pool-8688de55

What is the name of the Instance Group dynamically generated that the two nodes belong to?

gke-guestbook-default-pool-8688de55-grp

What are the names of the two nodes?

cloud-Chang-brachang

Search (/) for resources, docs, products, and more

Instance temp...

CREATE INSTANCE TEMPLATE

REFRESH

+ C

Instance templates are saved VM configurations used to create identical VMs, either individually or as part of managed instance groups. [Learn more](#)

Filter

Filter instance templates

?

<input type="checkbox"/>	Name ↑	Machine type	Image	Disk type	Loc	Ac
<input type="checkbox"/>	gke-guestbook-default-pool-8688de55	e2-medium	gke-1315-gke1068000-cos-117-18613-75-114-c-pre	Balanced persistent disk	us-1	⋮
<input type="checkbox"/>	gke-guestbook-default-pool-91944104	e2-medium	gke-1315-gke1068000-cos-117-18613-75-114-c-pre	Balanced persistent disk	us-1	⋮

5. Prepare a container image

Take a screenshot of the container image created

gcr.io > cloud-chang-brachang > gcp_gb > sha256:a872297f3c40ccaba80265fd10d017

OVERVIEW	PULL	MANIFEST	FILES	ATTACHMENTS
Format	Docker			
Media type	application/vnd.docker.distribution.manifest.v2+json			
Project	cloud-chang-brachang			
Location	us (multiple regions in United States)			
Repository	gcr.io			
Image	gcp_gb			
Digest	sha256:a872297f3c40ccaba80265fd10d0170e5c83ab7ab37bfa1c723f3af5a0145f49			
Virtual size	1.2 GB			
Built	Feb 24, 2025, 4:24:35 PM			
Created	Feb 24, 2025, 4:25:47 PM			
Updated	Feb 24, 2025, 4:25:47 PM			
Tags	latest			
Subject digest	—			
Artifact type	—			

7. Deploy the configuration

Take a screenshot of the output of the following command when all 3 replicas reach a "Running" state.

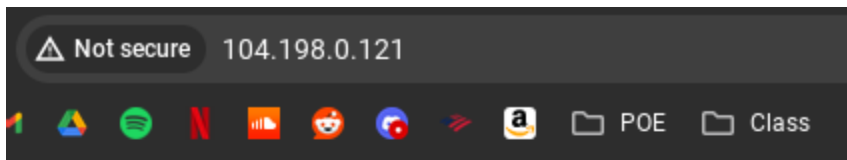
```
brachang@cloudshell:~/cs430-src/05_gcp_datastore (cloud-chang-brachang)$ kubectl get pods
NAME                READY   STATUS    RESTARTS   AGE
guestbook-replicas-8krq7  1/1     Running   0           104s
guestbook-replicas-wmz52  1/1     Running   0           104s
guestbook-replicas-wp6sc  1/1     Running   0           104s
brachang@cloudshell:~/cs430-src/05_gcp_datastore (cloud-chang-brachang)$
```

Take a screenshot of listing services with LoadBalancer indicating an external IP address that is ready for access.

```
brachang@cloudshell:~/cs430-src/05_gcp_datastore (cloud-chang-brachang)$ kubectl get services
NAME          TYPE          CLUSTER-IP    EXTERNAL-IP    PORT(S)          AGE
guestbook-lb  LoadBalancer  34.118.232.18  104.198.0.121  80:30693/TCP     2m26s
kubernetes    ClusterIP      34.118.224.1   <none>         443/TCP          27m
brachang@cloudshell:~/cs430-src/05_gcp_datastore (cloud-chang-brachang)$
```

8. View the Guestbook

Take a screenshot of the Guestbook including the URL with the entry in it.



Guestbook

[Sign here](#)

Entries

Bradley Chang <brachang@pdx.edu>
signed on 2025-02-25 00:35:09.303205+00:00
Hello Kubernetes!

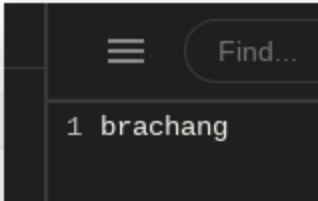
Take a screenshot of the managed guestbook pods and the service being exposed.

Managed pods

Name	Status	Restarts	Created on ↑
guestbook-replicas-8krq7	✓ Running	0	Feb 24, 2025, 4:31:24 PM
guestbook-replicas-wmz52	✓ Running	0	Feb 24, 2025, 4:31:24 PM
guestbook-replicas-wp6sc	✓ Running	0	Feb 24, 2025, 4:31:24 PM

Exposing services ?

Name ↑	Type	Endpoints
guestbook-lb	Load balancer	104.198.0.121:80 ↗



Take a screenshot of the load balancer and its details

cloud-Chang-brachang | network s | X | Search | ✦ | 📦 | 📄 | 1

← Load balancer details | EDIT | DELETE | → VIEW IN NETWORK TOPOLOGY

aba2760a0740a4291a8cebff95c27a2d

Target-pool Network Load Balancer

Frontend

Protocol ↑	IP version	IP:Port	Network Tier ?
TCP	IPv4	104.198.0.121:80	Premium

Backend

Name	Region	Health check
aba2760a0740a4291a8cebff95c27a2d	us-west1	k8s-365a84b54e71bd40-node

▼ ADVANCED CONFIGURATIONS

Instance ↑	Zone	104.198.0.121
gke-guestbook-default-pool-91944104-3knh	us-west1-a	✓
gke-guestbook-default-pool-91944104-twxc	us-west1-a	✓

Take a screenshot of the addresses allocated and indicate the ones associated with nodes versus the one associated with the load balancer.

cloud-Chang-brachang

network s

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Search

1

es

IP addresses

RESERVE EXTERNAL STATIC IP ADDRESS

RESERVE INTERNAL STATIC IP ADDRESS

SHOW INFO

ALL

INTERNAL IP ADDRESSES

EXTERNAL IP ADDRESSES

IPV4 ADDRESSES

IPV6 ADDRESSES

Filter

Enter property name or value

☐

Name

IP address

Access type

Region

Type ↓

Version

In use by

☐

—

10.138.0.2

Internal

us-west1

Ephemeral

IPv4

VM instance [course-vm](#) (Zone us-west1-b)

☐

—

10.138.0.24

Internal

us-west1

Ephemeral

IPv4

VM instance [gke-guestbook-default-pool-91944104-twxc](#) (Zone us-west1-a)

☐

—

10.138.0.25

Internal

us-west1

Ephemeral

IPv4

VM instance [gke-guestbook-default-pool-91944104-3knh](#) (Zone us-west1-a)

☐

—

34.19.0.220

External

us-west1

Ephemeral

IPv4

VM instance [gke-guestbook-default-pool-91944104-3knh](#) (Zone us-west1-a)

☐

—

34.19.77.136

External

us-west1

Ephemeral

IPv4

VM instance [gke-guestbook-default-pool-91944104-twxc](#) (Zone us-west1-a)

☐

—

104.198.0.121

External

us-west1

Ephemeral

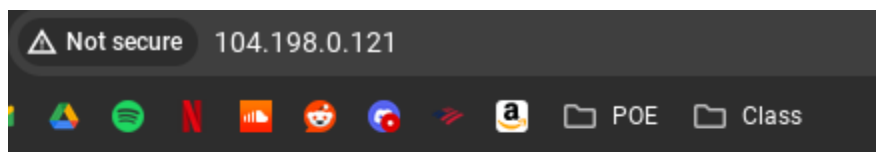
IPv4

Forwarding rule [aba2760a0740a4291a8cebf95c27a2d](#)

The load balancer is the last IP address while the nodes are the addresses from the 2nd to 4th ones.

12. Deploy and view application

Take a screenshot of the Guestbook including the URL with the entry in it.



Bradley Chang <brachang@pdx.edu>
signed on 2025-02-25 01:02:29.159730+00:00
Hello Cloud Build!

07.3g: APIs (Slack, Knowledge Graph)

2. Code

Does Google provide a Python package specifically for accessing the Knowledge Graph API?

No it does not.

Show the source line that constructs the query we wish to send to the Knowledge Graph API.

```
req = kgsearch.entities().search(query=query, limit=1)
```

Show the source line that then executes the query and saves the response. What is the name of the method that sends the query to the Knowledge Graph API?

```
res = req.execute()
```

What is the Python data type that is used to represent the formatted message?

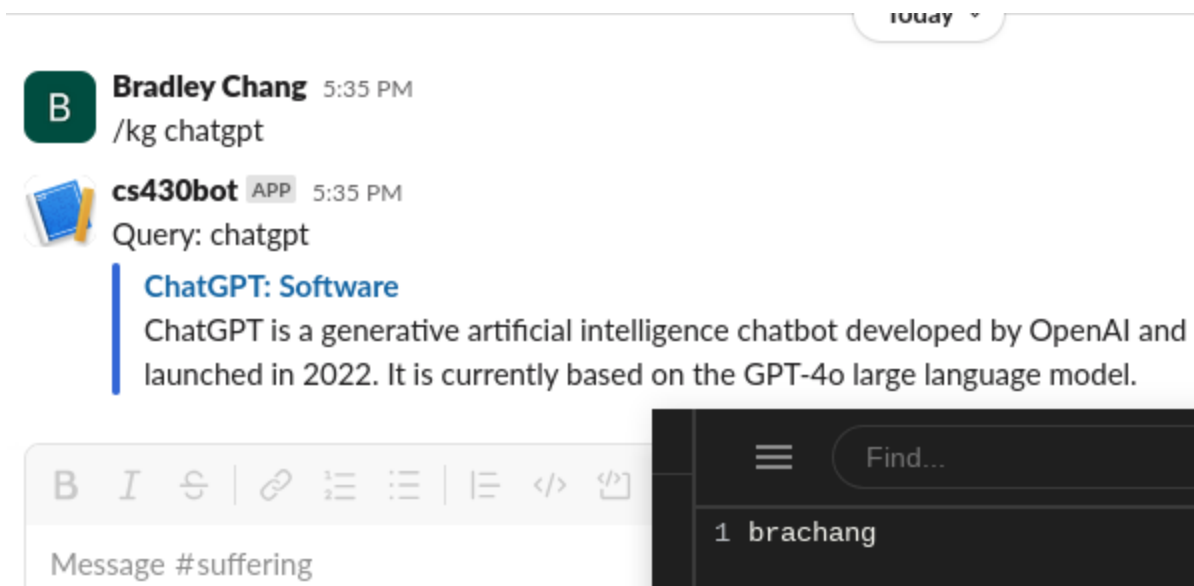
A dictionary

What are the three main attributes of the formatted message passed back to Slack?

Response type, text, attachments

8. Test the command

Take a screenshot of its response for your lab notebook.



7.4g: ML APIs

3. Vision

Show the output for your lab notebook

```
brachang@cloudshell:~/py  
.jpg  
Labels:  
Bird  
Ratite  
Common ostrich  
Flightless bird  
Beak  
Vertebrate  
Wildlife  
Terrestrial animal  
Greater rhea  
Feather  
brachang@cloudshell:~/py
```

What is the name of the function?

```
def detect_labels_uri(uri)
```

What type of Vision client is instantiated in it?


```
client = vision.ImageAnnotatorClient()
```

What method is invoked in the Vision client to perform the detection?

```
response = client.label_detection(image=image)
```

What is the name of the attribute in the response object that contains the results we seek?

```
labels = response.label_annotations
```

Take a screenshot of the output for the above commands

```
brachang@cloudshell:~/python-docs-samples/vision/snippets/detect (cloud-chang-brachang)$ python detect.py logos psu_logo.jpg
Logos:
Portland State University
brachang@cloudshell:~/python-docs-samples/vision/snippets/detect (cloud-chang-brachang)$
```

What method is invoked in the Vision client to perform the detection?

```
def detect_logos(path)
```

4. Speech

Show the output for your lab notebook

```
(env) brachang@cloudshell:~ (cloud-chang-brachang)$ cd ~/python-docs-samples/speech/snippets
(env) brachang@cloudshell:~/python-docs-samples/speech/snippets (cloud-chang-brachang)$ python transcribe.py resources/audio.raw
Transcript: how old is the Brooklyn Bridge
(env) brachang@cloudshell:~/python-docs-samples/speech/snippets (cloud-chang-brachang)$
```

What is the name of the function?

```
transcribe_file
```

What method is invoked in the Speech client to perform the detection?

```
response = client.recognize(config=config, audio=audio)
```

What is the name of the attribute in the response object that contains the results we seek?

```
response.results
```

5. Translate

Show the output for your lab notebook

```
(env) brachang@cloudshell:~/python-docs-samples/translate/samples/snippets (cloud-chang-brachang)$ python snippets.py translate-text en '你有沒有帶外套'  
Text: 你有沒有帶外套  
Translation: Do you have a coat?  
Detected source language: zh-TW  
(env) brachang@cloudshell:~/python-docs-samples/translate/samples/snippets (cloud-chang-brachang)$
```

What is the name of the function?

```
translate_text
```

What method is invoked in the Translate client to perform the detection?

```
translate_client = translate.Client()
```

What is the name of the attribute in the response object that contains the results we seek?

```
result = translate_client.translate(text, target_language=target)
```

6. Natural Language

Show the output for your lab notebook

```
(env) brachang@cloudshell:~/python-docs-samples/translate/samples/snippets (cloud-chang-brachang)$ python language.py 'homework is awful!'  
python language.py 'homework is ok'  
python language.py 'homework is awesome?'  
python language.py 'homework is awesome!'  
python language.py 'The protestors in Oregon put on gas masks and wore yellow t-shirts'  
"homework is awful!" has sentiment=-0.800000011920929  
  
Entities are:  
name: homework  
"homework is ok" has sentiment=0.30000001192092896  
  
Entities are:  
name: homework  
"homework is awesome?" has sentiment=0.4000000059604645  
  
Entities are:  
name: homework  
"homework is awesome!" has sentiment=0.8999999761581421  
  
Entities are:  
name: homework  
"The protestors in Oregon put on gas masks and wore yellow t-shirts" has sentiment=-0.6000000238418579  
  
Entities are:  
name: protestors  
name: gas masks  
name: Oregon  
name: t-shirts  
(env) brachang@cloudshell:~/python-docs-samples/translate/samples/snippets (cloud-chang-brachang)$
```

8. Code

What is the name of the function that performs the transcription?

transcribe_gcs

What is the name of the function that performs the translation?

translate_text

What is the name of the function that performs the entity analysis on the translation?

entities_text

What is the name of the function that performs the entity analysis on the image?

detect_labels_uri(uri)

9. Test Integration

If the program deems them unrelated, then based on the results from the APIs, what must be changed in the program to address this?

```
(env) brachang@cloudshell:~/python-docs-samples/speech/snippets (cloud-chang-brachang)$ python solution.py de-DE gs://cloud-samples-data/ml-api-codelab/de-ball.wav gs://cloud-samples-data/ml-api-codelab/football.jpg
Transcription: willst du mit uns Fußball spielen
Translation: do you want to play football with us
Entities: ['football']
Image labels: ['Ball', 'Football', 'Sports', 'Football', 'Ball game', 'Soccer ball', 'Sports venue', 'Soccer-specific stadium']
The audio and image do not appear to be related.
(env) brachang@cloudshell:~/python-docs-samples/speech/snippets (cloud-chang-brachang)$
```

Here it says that they are unrelated likely due to case sensitivity, which the code needs to be adjusted to account for this.

If the program deems them unrelated, then based on the results from the APIs, what must be changed in the program to address this?

```
brachang@cloudshell:~/python-docs-samples/speech/snippets (cloud-chang-brachang)$ python solution.py tr-TR gs://cloud-samples-data/ml-api-codelab/tr-bike.wav gs://cloud-samples-data/ml-api-codelab/bicycle.jpg
Transcription: bisikletimi sokağa bırak
Translation: leave my bike on the street
Entities: ['bike', 'street']
Image labels: ['Bicycle frame', 'Bicycle', 'Bicycle handlebar', 'Bicycle tire', 'Bicycle Wheel Rim', 'Bicycle chain', 'Bicycle wheel', 'Spoke', 'Bicycle fork', 'Crankset']
The audio and image do not appear to be related.
brachang@cloudshell:~/python-docs-samples/speech/snippets (cloud-chang-brachang)$
```

Again it says that they are unrelated. This is likely because it does not account for the shorter synonym for bicycle which is bike.

If the program deems them unrelated, then based on the results from the APIs, what must be changed in the program to address this?

```
ml-api-codelab/tr-ostrich.wav gs://cloud-samples-data/ml-api-codelab/birds.jpg
Transcription: çok fazla deve kuşu var
Translation: There are too many ostriches
Entities: ['ostriches']
Image labels: ['Bird', 'Ratite', 'Common ostrich', 'Flightless bird', 'Beak', 'Vertebrate', 'Wildlife', 'Terrestrial animal', 'Greater rhea', 'Feather']
The audio and image do not appear to be related.
brachang@cloudshell:~/python-docs-samples/speech/snippets (cloud-chang-brachang)$
```

The program says they are unrelated. It is likely not accounting for multiple ostriches.

13. Video Intelligence

What are the 3 labels with the highest confidence that the Video Intelligence API associates with the video and what are the confidences for each?

Video label description: player

Segment 0: 0s to 178s

Confidence: 0.8446521162986755

Video label description: basketball

Label category description: sports

Segment 0: 0s to 178s

Confidence: 0.9137870669364929

Video label description: sports

Segment 0: 0s to 178s

Confidence: 0.9218811392784119

What is the name of the client class in the package that is used?

VideoIntelligenceServiceClient

What method is used in that class to perform the annotation?

annotate_video(input_uri, features)

16. Application

Take a screenshot for your lab notebook that includes the URL.

Requirements took too long to install that my cloudshell timed out. I'm not wasting any more of my time.

17. Code

What line of code creates the query for previous detections?

```
query = datastore_client.query(kind="Faces")
```

What line of code sends the query to Cloud Datastore?

```
image_entities = list(query.fetch())
```

Show the line that retrieves the name of the storage bucket to use.

```
bucket = storage_client.get_bucket(CLOUD_STORAGE_BUCKET)
```

What form field is used to specify the uploaded photo?

```
"file" from request.files["file"]
```

Show the line that copies the photo's contents to the storage bucket.

```
blob.upload_from_string(photo.read(), content_type=photo.content_type)
```

What method in Vision's annotation client is used to perform the analysis?

```
face_detection()
```

What fields are stored in Cloud Datastore for each image?

1. blob_name
2. image_public_url
3. timestamp
4. joy

What happens at the end of the upload_photo route?

The function redirects to the home page.