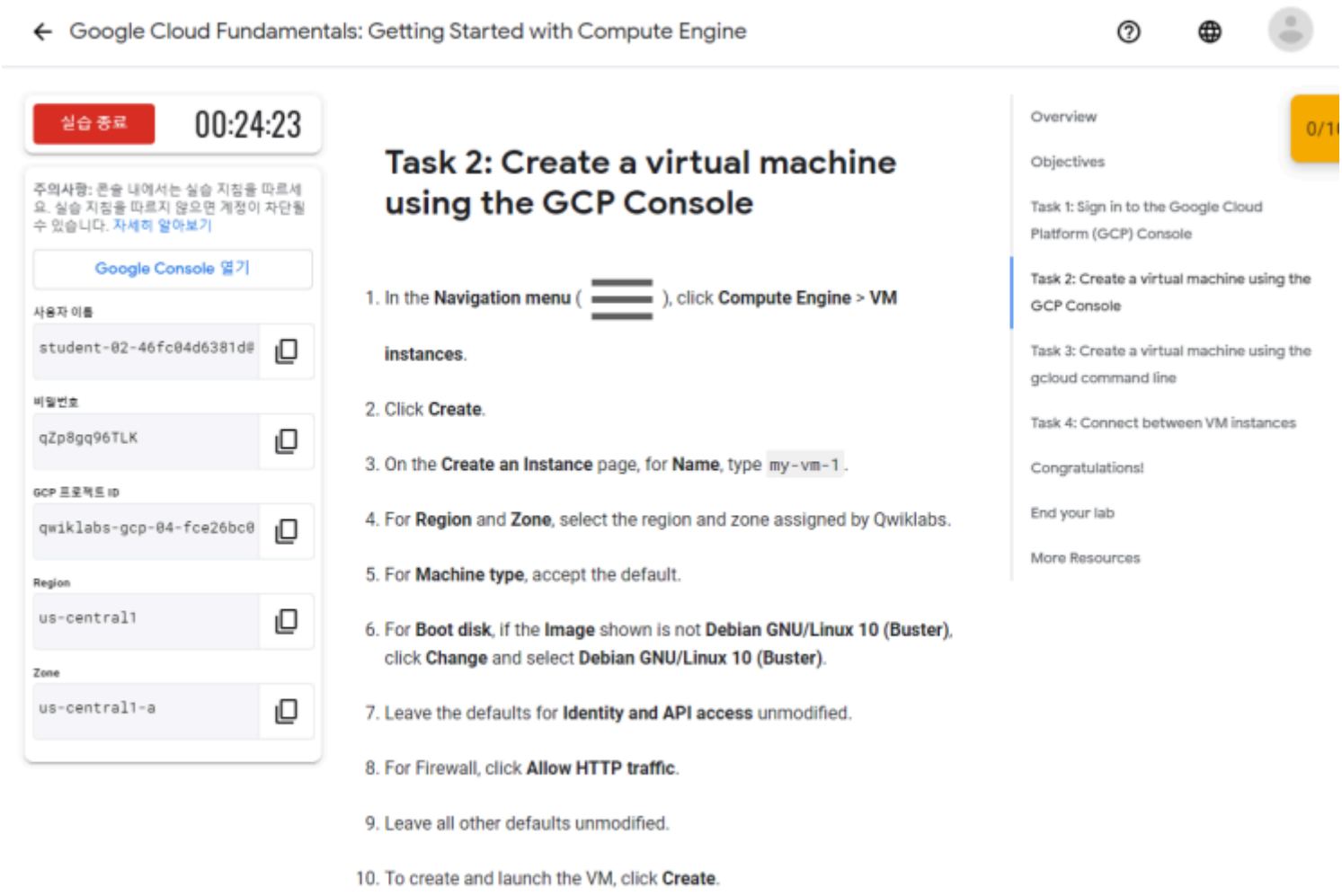
GCP Fundamentals 실습

클라우드

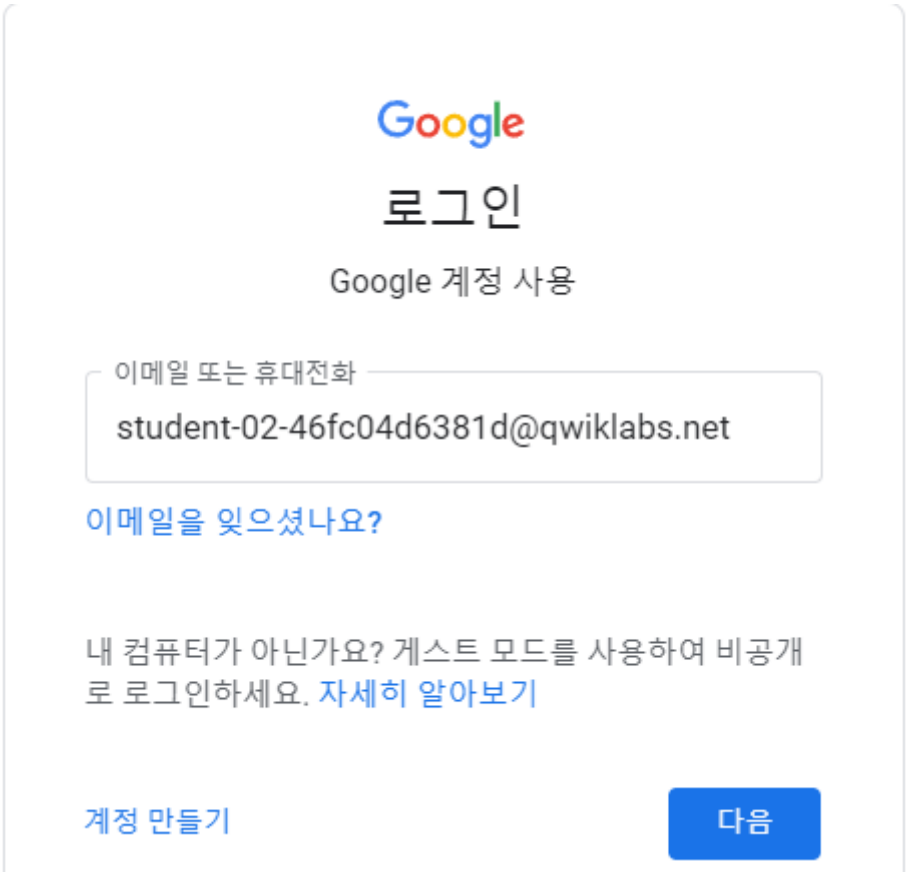
2021/10/26 16:42 http://blog.naver.com/applej424/222549000118

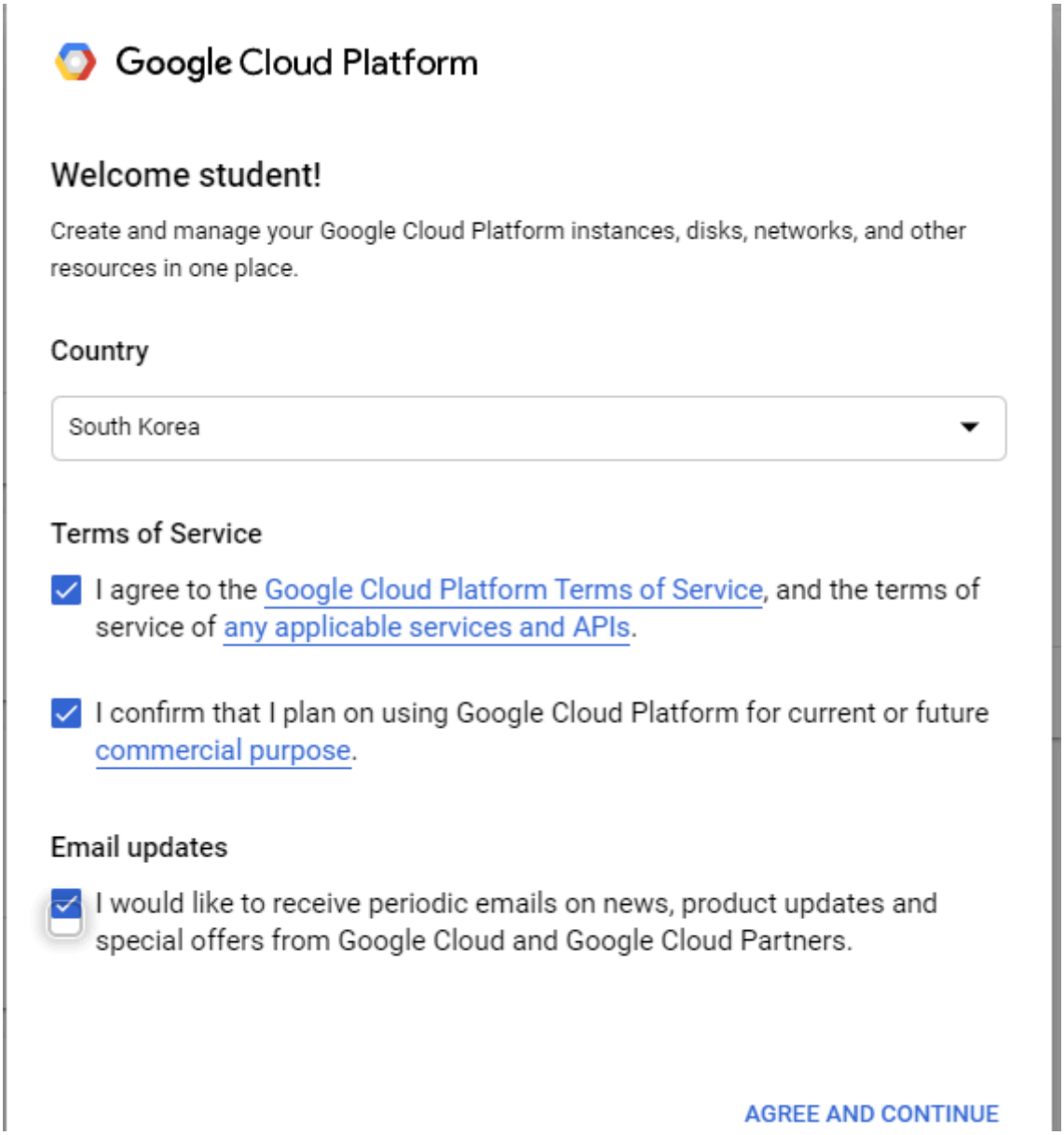
* 메가존 클라우드의 GCP Fundamentals labs day를 정리합니다.

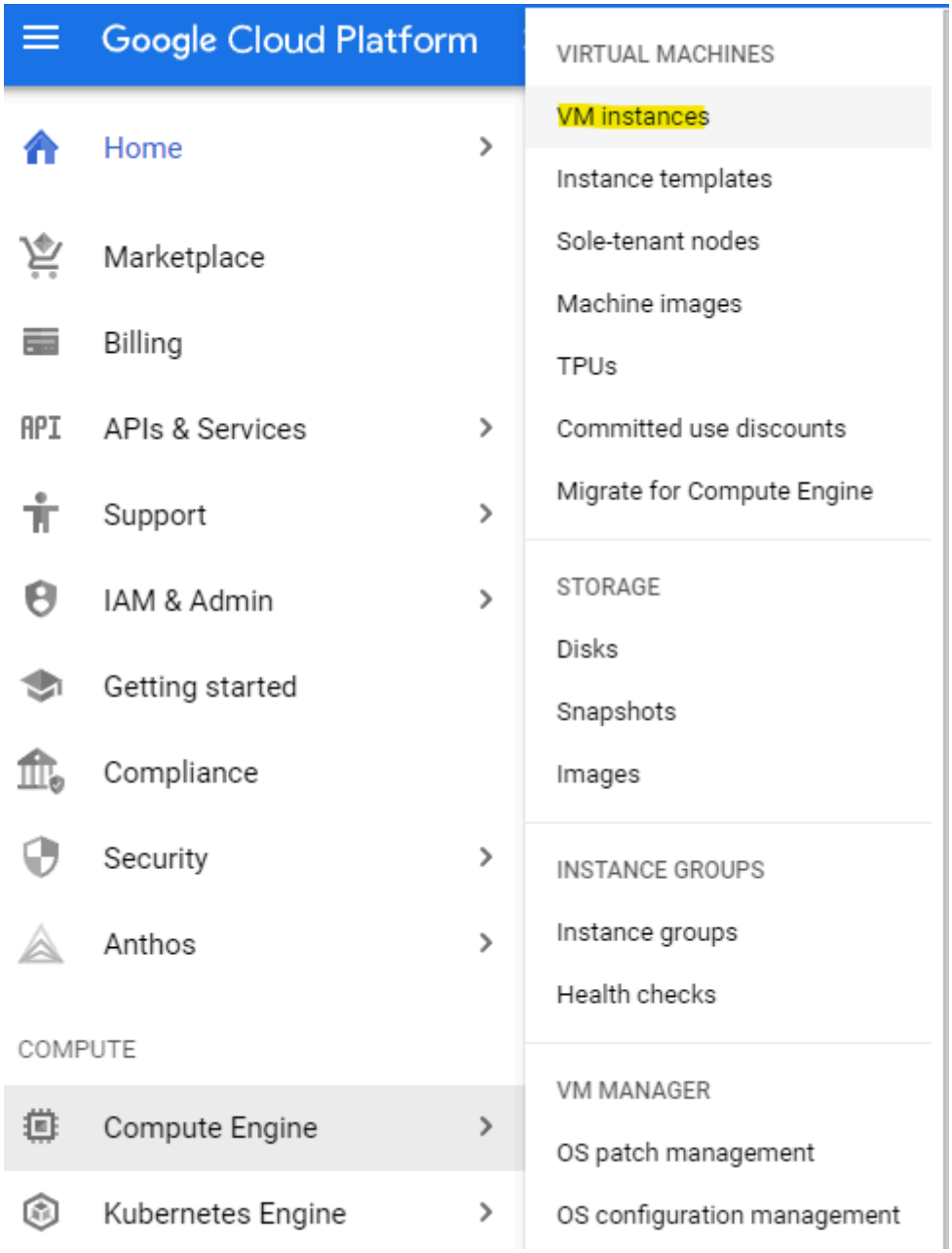
#실습1 Google Clud Fundatmentals: Getting Started with Compute Engine

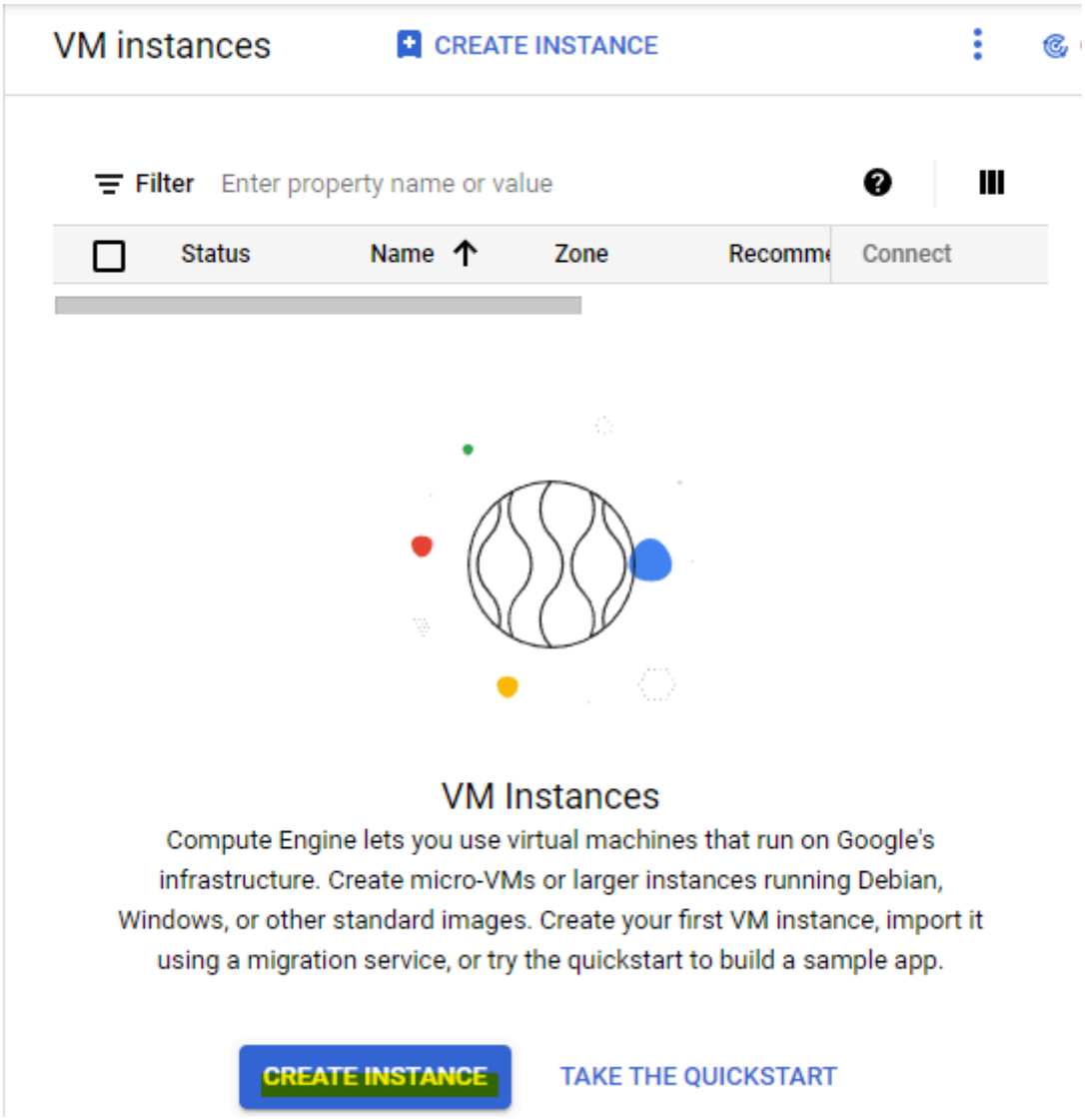


Google Console 열기 클릭


Google
로그인
Google 계정 사용
이메일 또는 휴대전화
student-02-46fc04d6381d@qwiklabs.net
이메일을 잊으셨나요?
내 컴퓨터가 아닌가요? 게스트 모드를 사용하여 비공개로 로그인하세요. 자세히 알아보기
계정 만들기
다음


Google Cloud Platform
Welcome student!
Create and manage your Google Cloud Platform instances, disks, networks, and other resources in one place.
Country
South Korea
Terms of Service
I agree to the Google Cloud Platform Terms of Service, and the terms of service of any applicable services and APIs.
I confirm that I plan on using Google Cloud Platform for current or future commercial purpose.
Email updates
I would like to receive periodic emails on news, product updates and special offers from Google Cloud and Google Cloud Partners.
AGREE AND CONTINUE


Google Cloud Platform
Home
Marketplace
Billing
APIs & Services
Support
IAM & Admin
Getting started
Compliance
Security
Anthos
COMPUTE
Compute Engine
Kubernetes Engine
VIRTUAL MACHINES
VM instances
Instance templates
Sole-tenant nodes
Machine images
TPUs
Committed use discounts
Migrate for Compute Engine
STORAGE
Disks
Snapshots
Images
INSTANCE GROUPS
Instance groups
Health checks
VM MANAGER
OS patch management
OS configuration management



1) vm의 이름을 적는다.

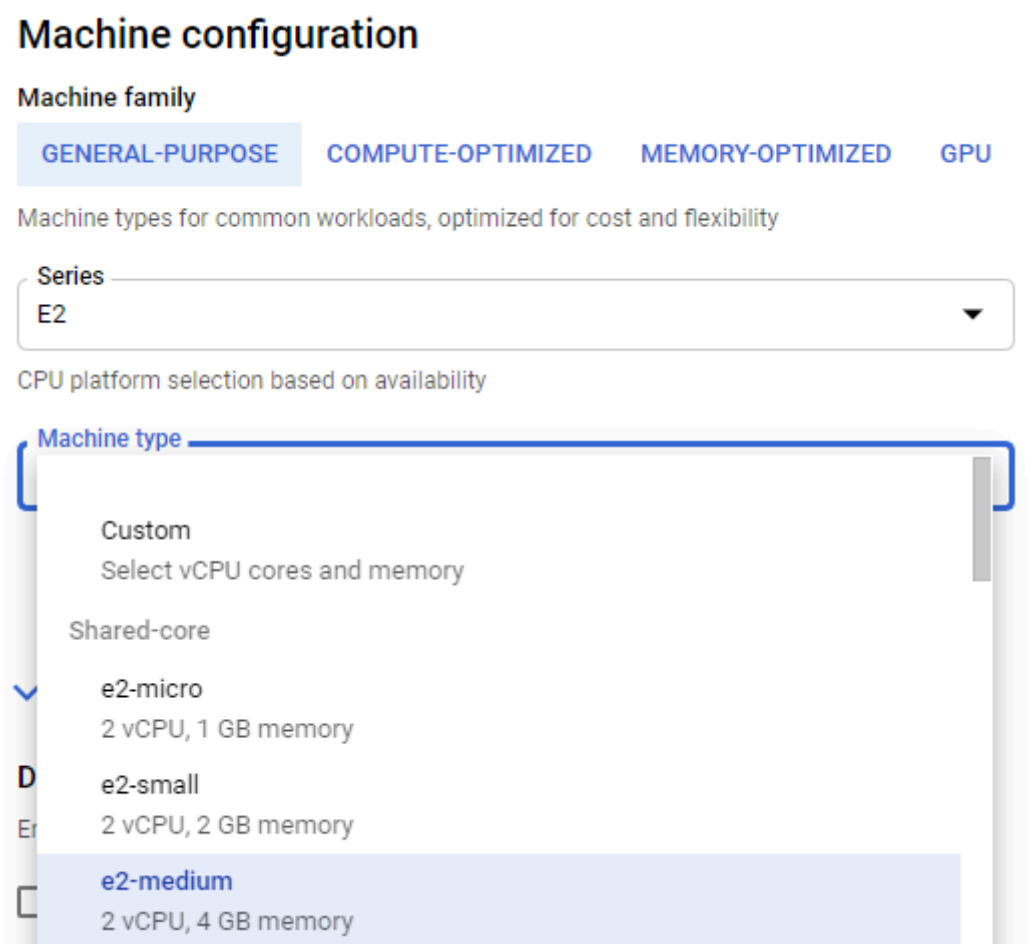
2) Regin 및 zone 설정

- 내 vm을 실제로 배치할 물리적인 옵션(서울사람들에게 빨리 vm을 제공하고 싶다면? South korea로 설정할 것)

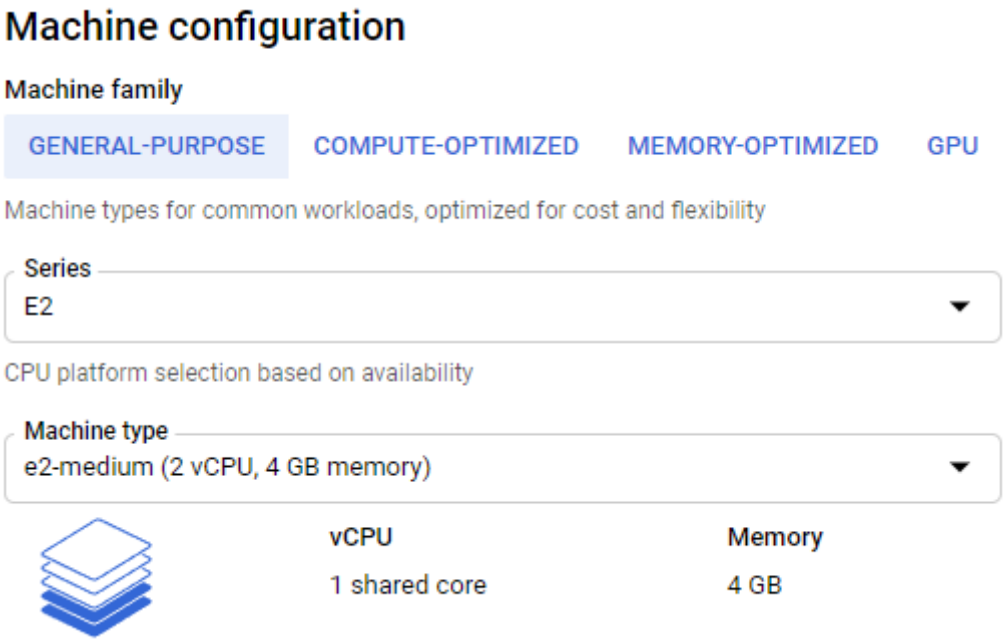
- zone은 내가 어떤 데이터센터 클래스에 vm을 지정할 수 있는지 설정.

기본적으로 3개~4개 되는 데이터센터를 구성한다.

만약 1개의 데이터 센터가 다운될 경우, 그 Region 전체에 서비스 제공이 불가능해지기에, 여러개의 데이터 센터를 일정 거리 띄어두고 분산배치한 것.



나에게 딱 맞는 custom 타입 vm을 사용할 수 있음



e2-medium을 선택

원래는 외부 로컬 PC에서 my-vm-1 웹서버로 접속이 불가능하지만,

Firewall: Allow HTTP 허용하여 외부에서 들어오는 모든 HTTP 트래픽 허용이 가능하다.

Identity and API access

Service accounts

Service account
Compute Engine default service account

Access scopes

- (•) Allow default access
- ( ) Allow full access to all Cloud APIs
- ( ) Set access for each API

Firewall

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

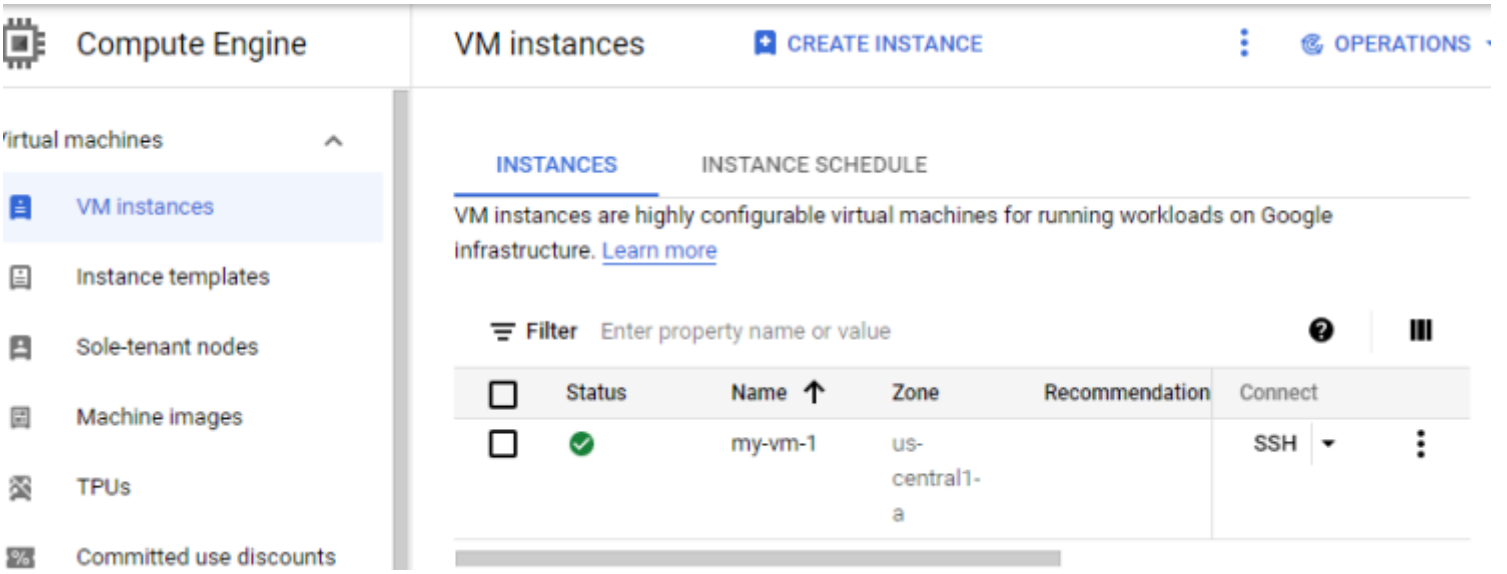
- [x] Allow HTTP traffic
- [ ] Allow HTTPS traffic

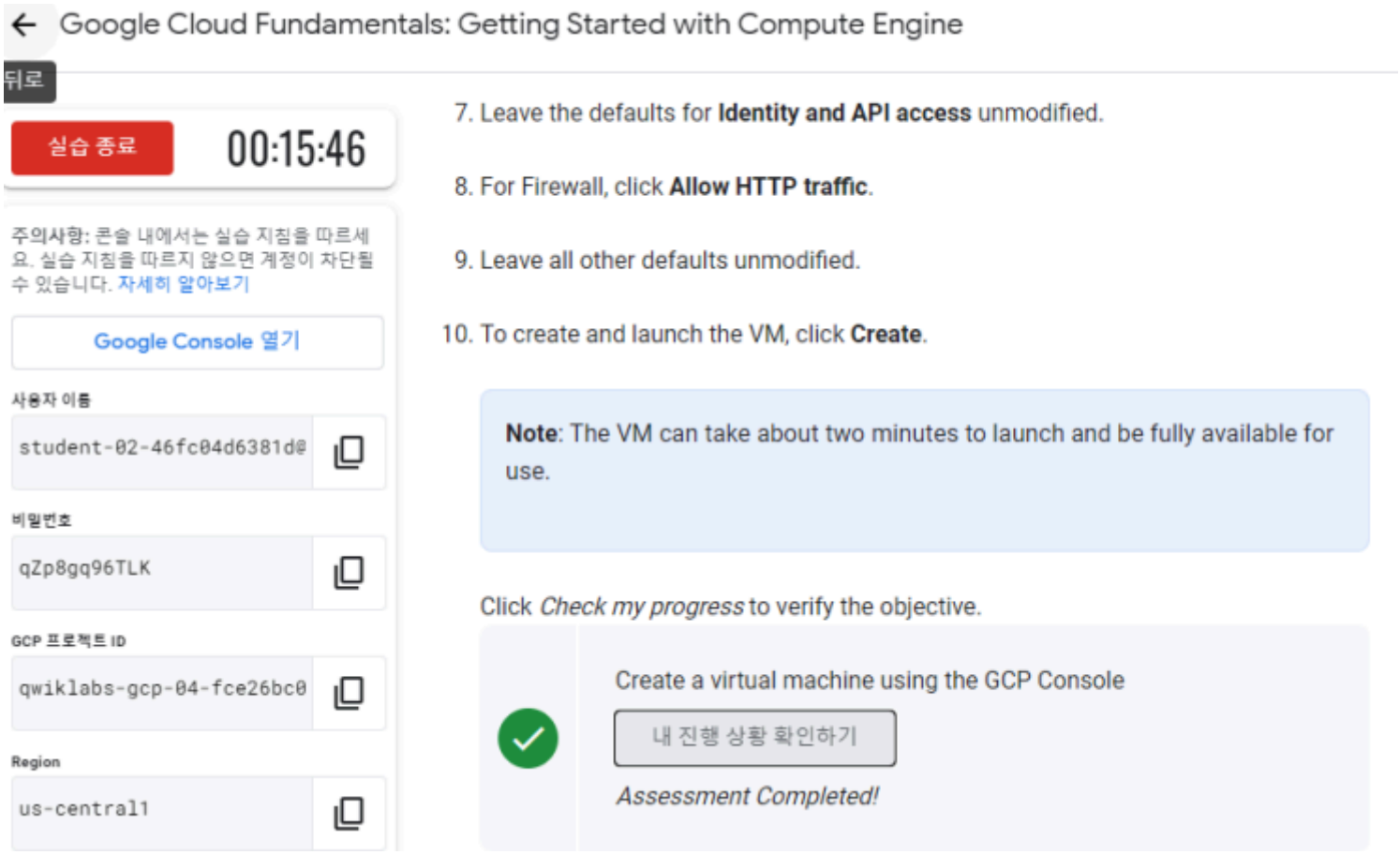
NETWORKING, DISKS, SECURITY, MANAGEMENT, SOLE-TENANCY

You will be billed for this instance. Compute Engine pricing

CREATE CANCEL EQUIVALENT COMMAND LINE

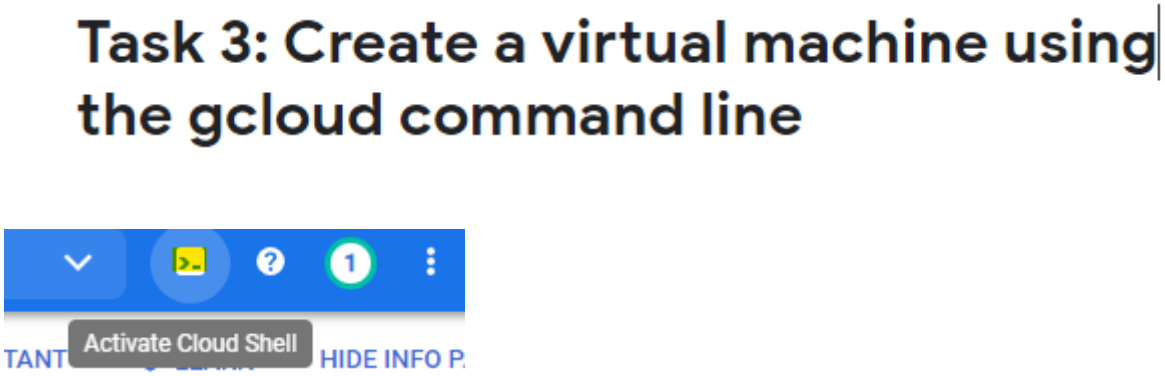
vm 생성

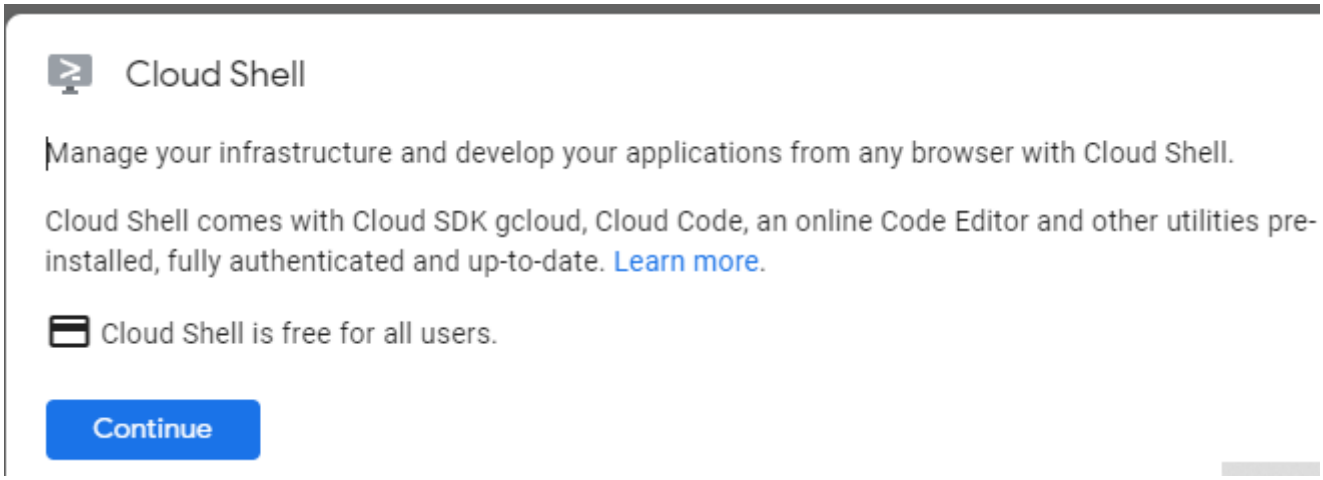


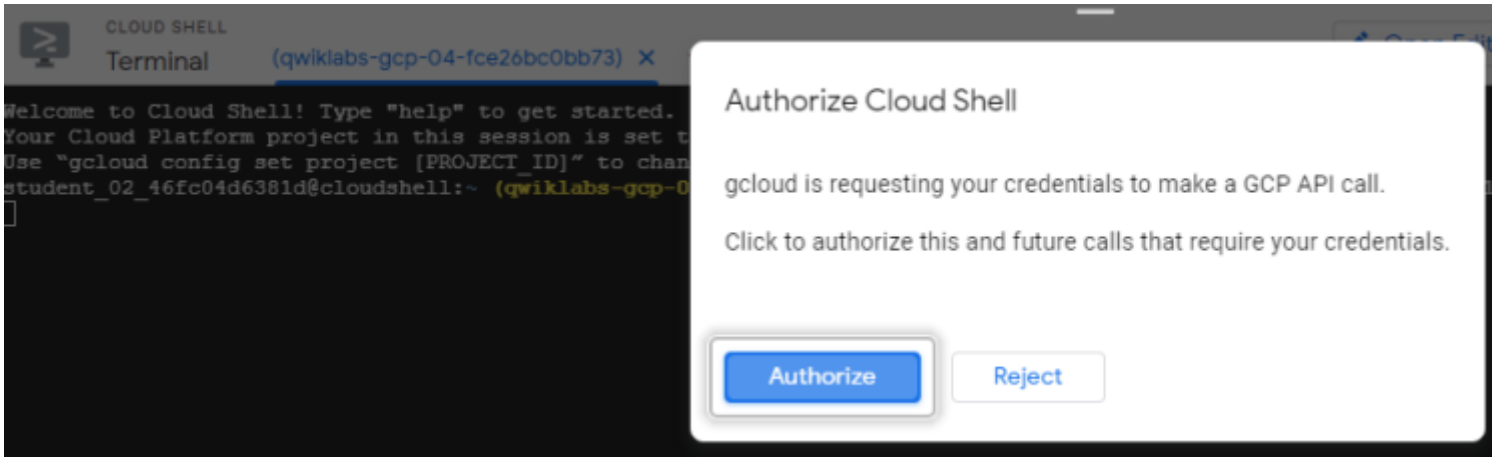


vm 생성 확인 : 내 진행상황 확인하기 Assesment Completed!

클라우드 쉘 활성화





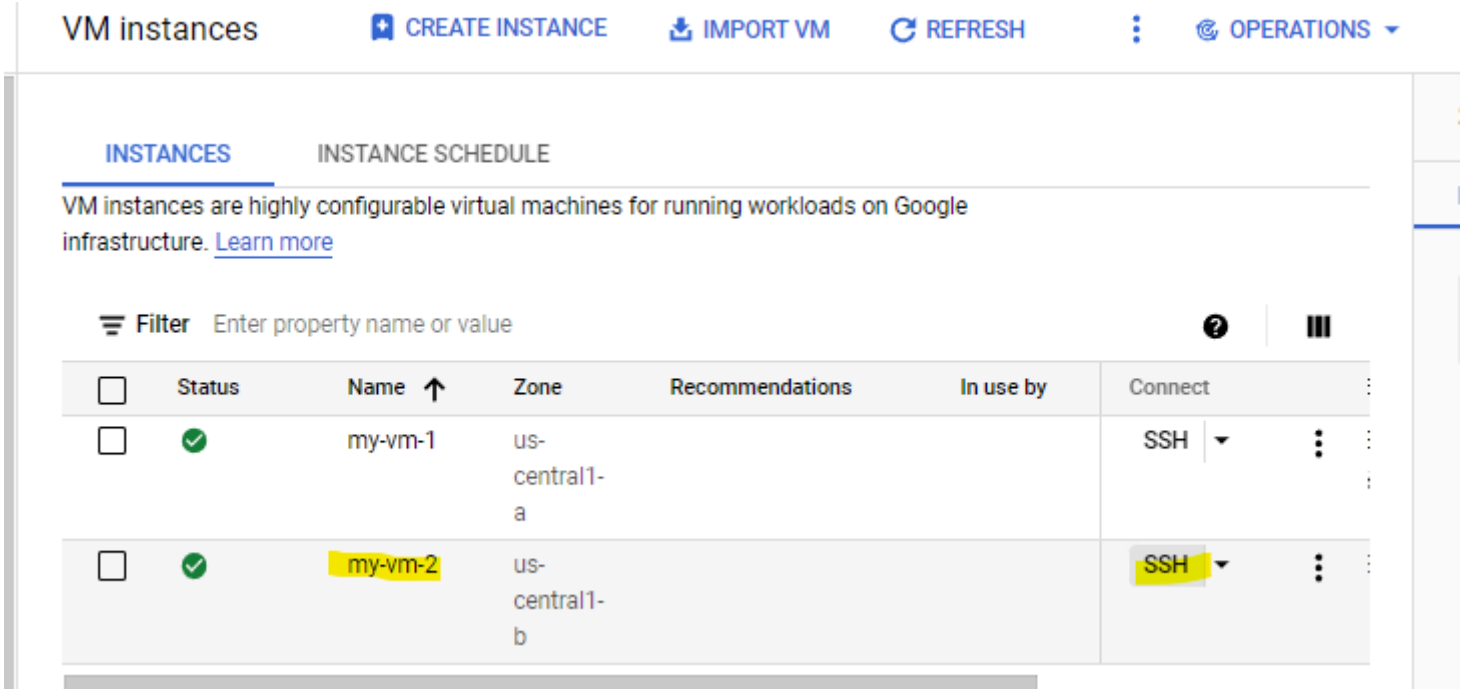



```
student_02_46fc04d6381d@cloudshell:~ (qwiklabs-gcp-04-fce26bc0bb73)$ gcloud compute zones list | grep us-central1
NAME: us-central1-c
REGION: us-central1
NAME: us-central1-a
REGION: us-central1
NAME: us-central1-f
REGION: us-central1
NAME: us-central1-b
REGION: us-central1
student_02_46fc04d6381d@cloudshell:~ (qwiklabs-gcp-04-fce26bc0bb73)$ gcloud config set compute/zone us-central1-b
Updated property [compute/zone].
```

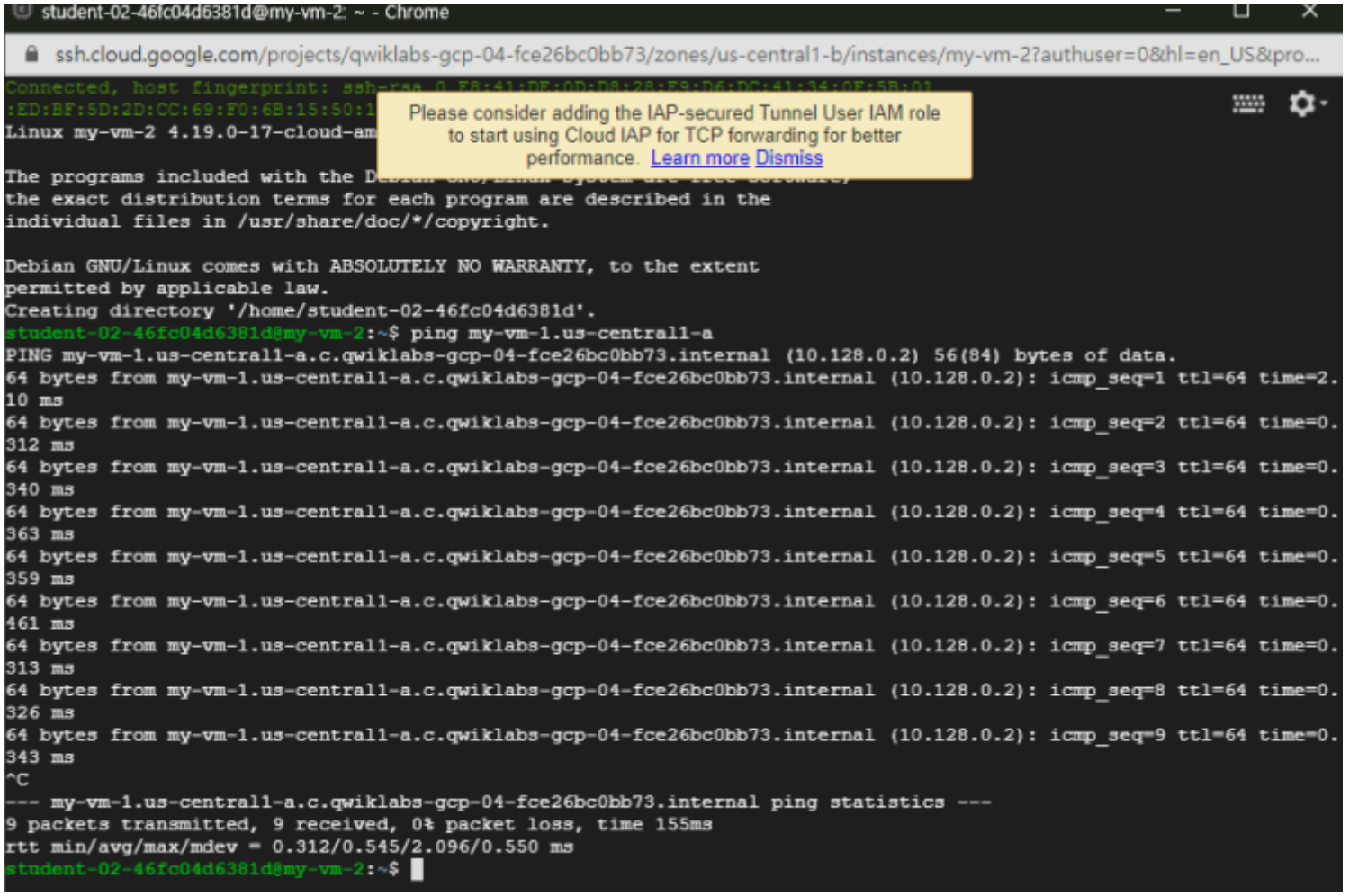
내가 생성한 vm을 us-centrall-b에 생성하겠다

```
student_02_46fc04d6381d@cloudshell:~ (qwiklabs-gcp-04-fce26bc0bb73)$ gcloud compute instances create "my-vm-2" \
> --machine-type "n1-standard-1" \
> --image-project "debian-cloud" \
> --image-family "debian-10" \
> --subnet "default"
Created [https://www.googleapis.com/compute/v1/projects/qwiklabs-gcp-04-fce26bc0bb73/zones/us-central1-b/instances/m
NAME: my-vm-2
ZONE: us-central1-b
MACHINE_TYPE: n1-standard-1
PREEMPTIBLE:
INTERNAL_IP: 10.128.0.3
EXTERNAL_IP: 34.123.176.22
STATUS: RUNNING
student_02_46fc04d6381d@cloudshell:~ (qwiklabs-gcp-04-fce26bc0bb73)$
```

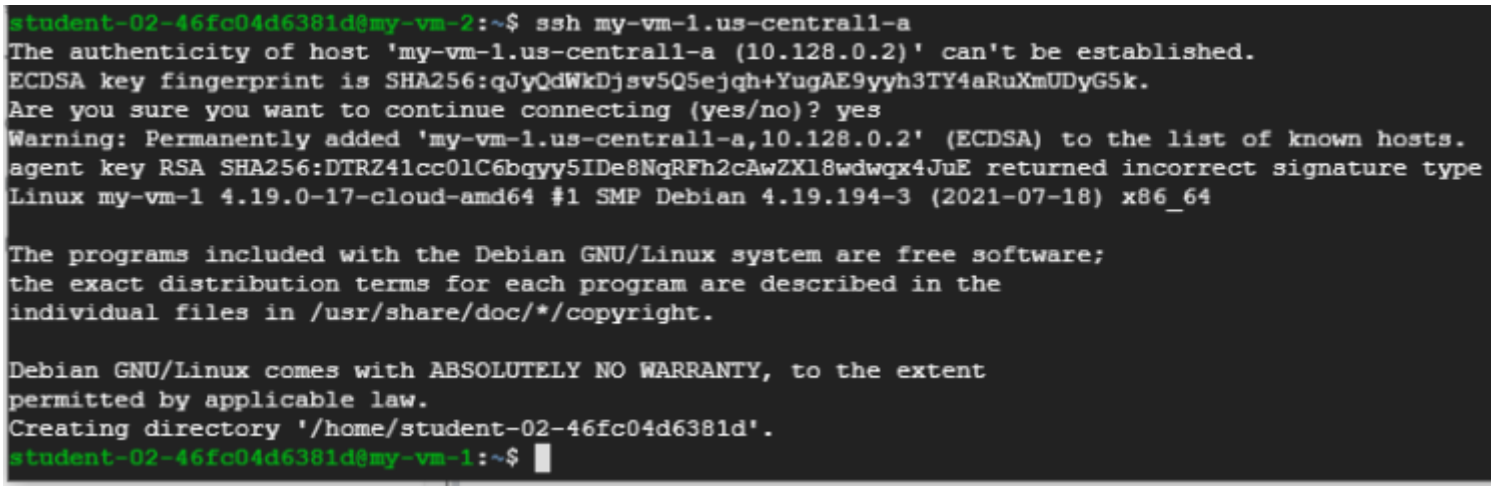
Task 4: Connect between VM instances



my-vm-1으로 컬렉션을 시도해본다.



ssh로 my-vm-2에서 my-vm-1으로 접속한다.



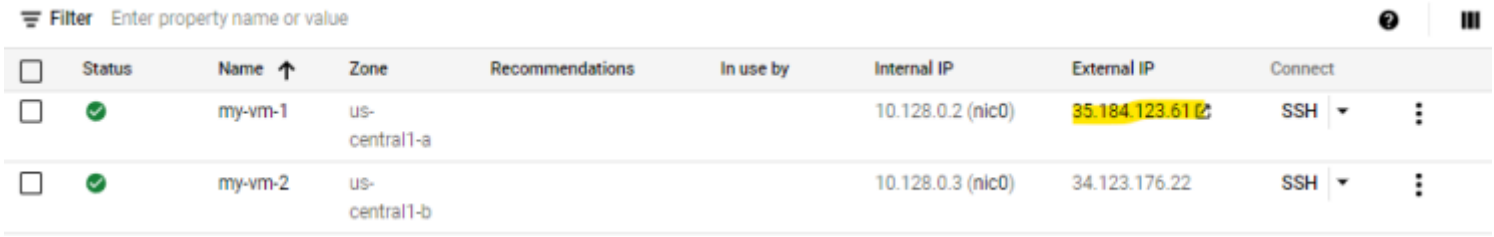
my-vm-1에서 Nginx Web Server를 설치한다.

```
student-02-46fc04d6381d@my-vm-1:~$ sudo apt-get install nginx-light -y
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  libnginx-mod-http-echo nginx-common
Suggested packages:
```

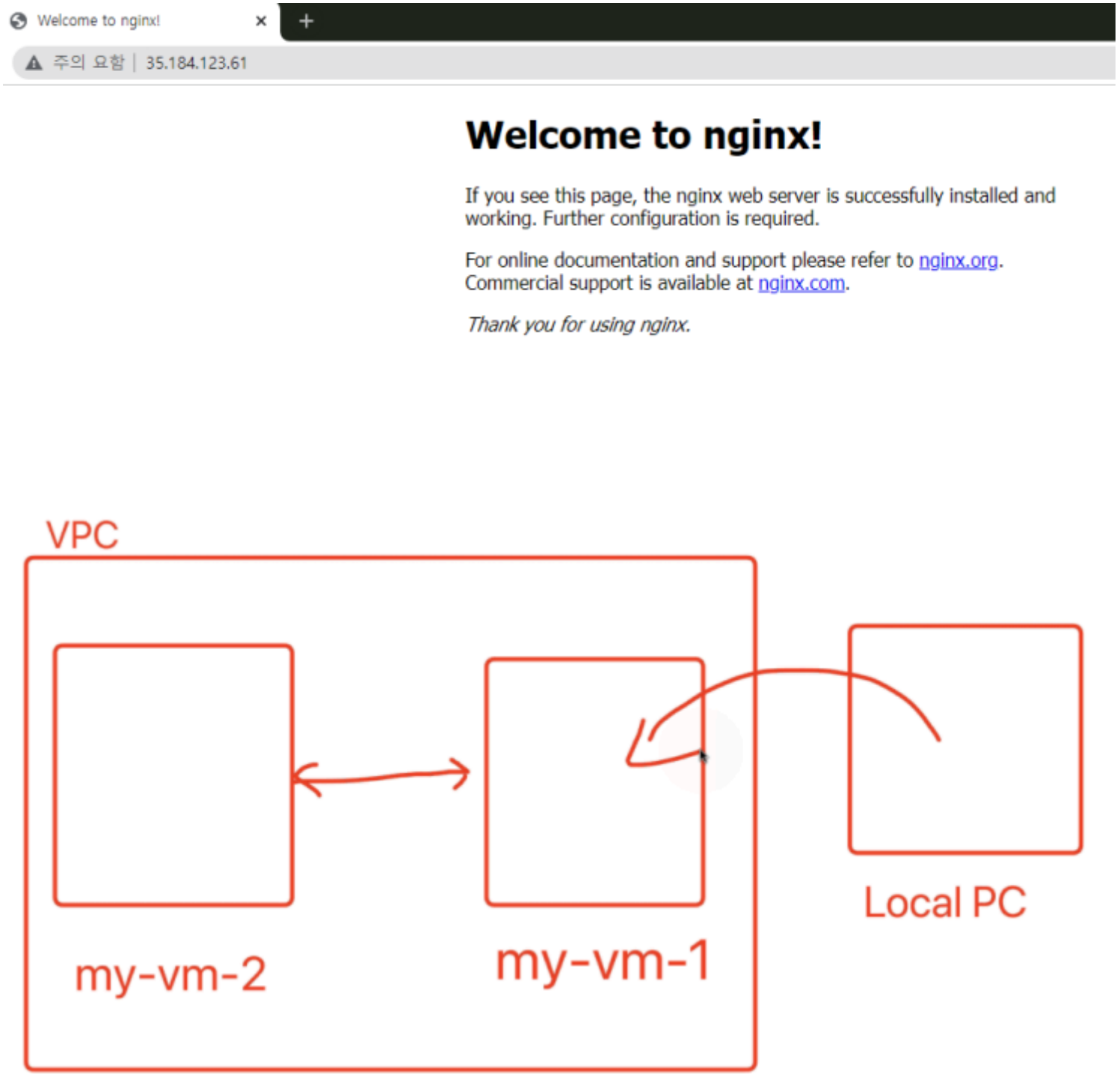
my-vm-1에서 exit해서 my-vm-2로 접속한다.

```
student-02-46fc04d6381d@my-vm-2:~$ curl http://my-vm-1.us-central1-a/
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
    body {
        width: 35em;
        margin: 0 auto;
        font-family: Tahoma, Verdana, Arial, sans-serif;
    }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>

<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>

<p><em>Thank you for using nginx.</em></p>
</body>
</html>
```

로컬 컴퓨터(외부)에서 GCP 에 접속이 되는지 확인해본다.



my-vm-1에 설치한 Nginx 서버에 외부에서 접속할 수 있다.



#실습2 Google Cloud Fundamentals: Getting Started with GKE

구글GCP에서는 관리형으로 쿠버네티스 업데이트, 스케일링, 정비 등을 제공한다.

Task 3: Start a Kubernetes Engine cluster

← Google Cloud Fundamentals: Getting Started with GKE

실습 종료 00:35:00

실습 리소스 프로비저닝 중

남은 예상 시간: 1분 미만

주의사항: 콘솔 내에서는 실습 지침을 따르세요. 실습 지침을 따르지 않으면 계정이 차단될 수 있습니다. 자세히 알아보기

Google Console 열기

사용자 이름

student-02-73d54166cbb0@

비밀번호

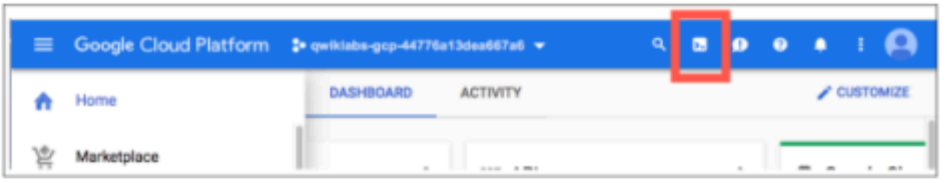
YM39cr3WDt

GCP 프로젝트 ID

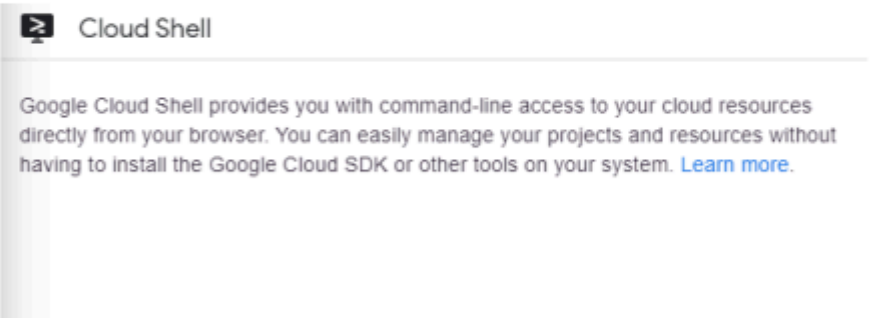
qwiklabs-gcp-01-2346a16f

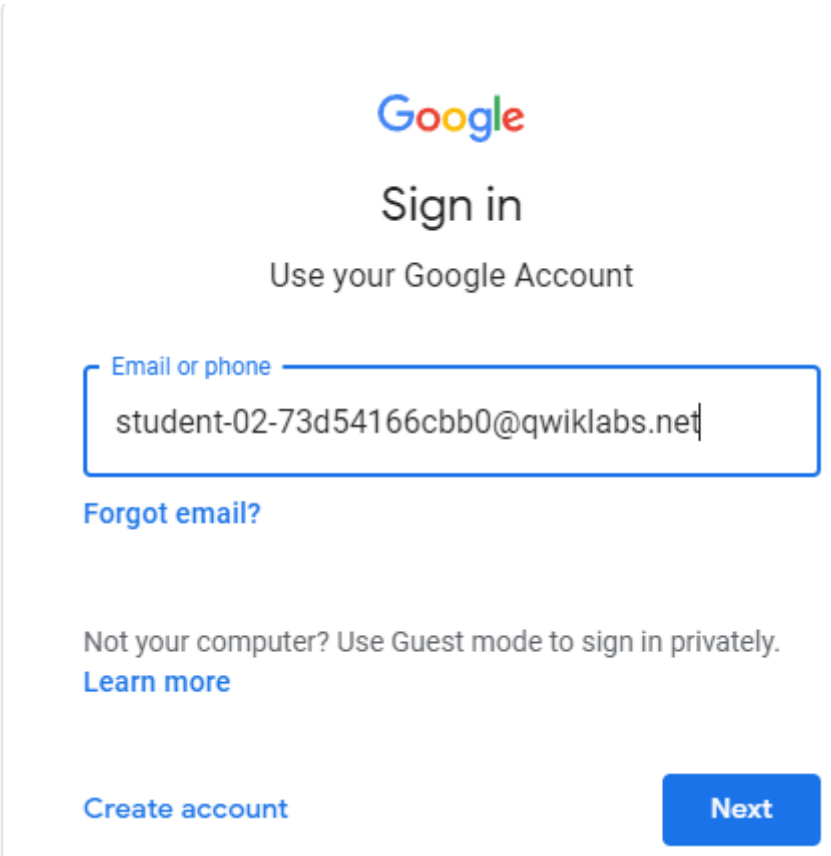
Task 3: Start a Kubernetes Engine cluster

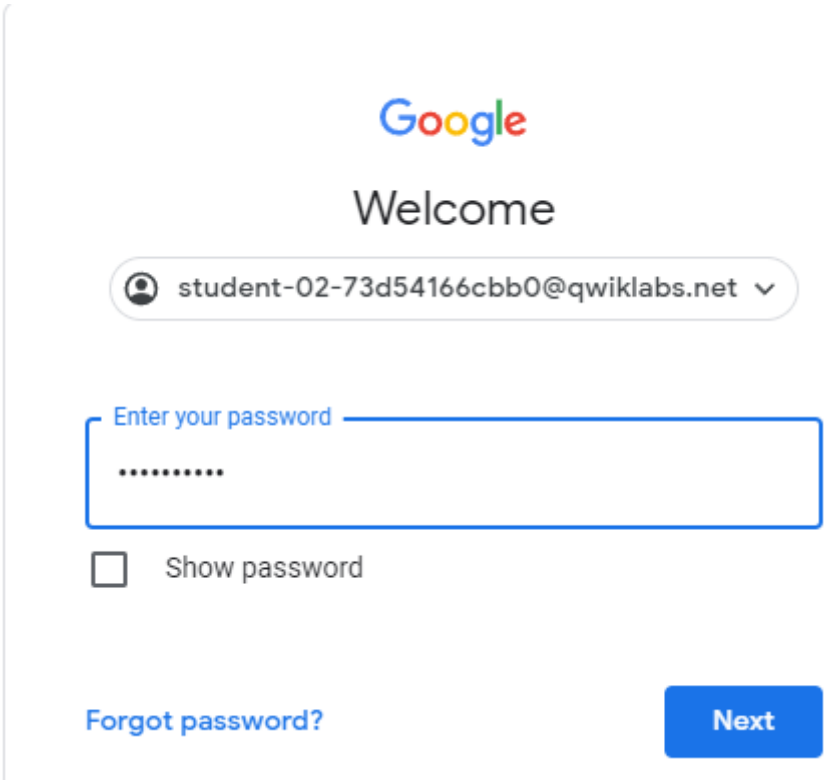
1. In GCP console, on the top right toolbar, click the **Activate Cloud Shell** button.



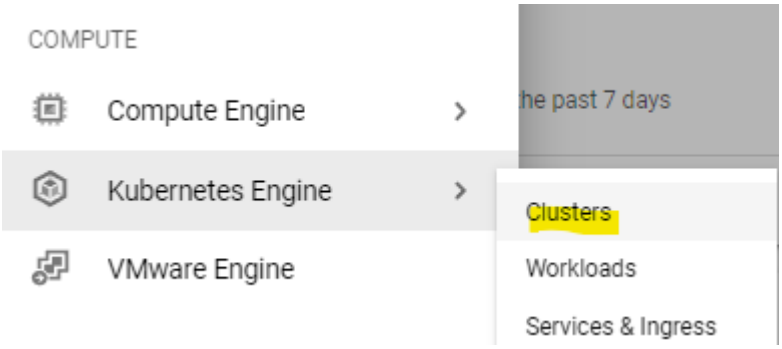
2. Click **Continue**.

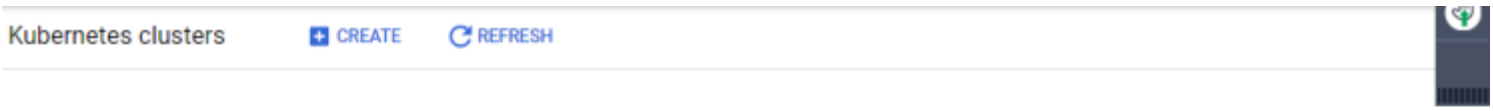


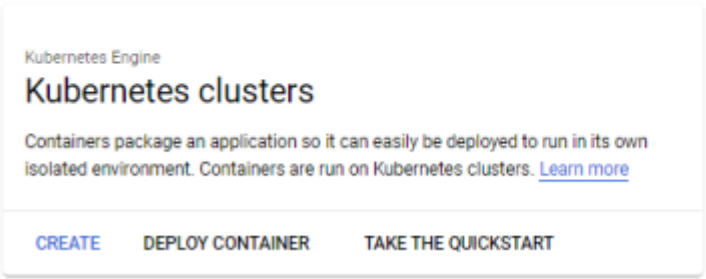




쿠버네티스 클러스터 생성

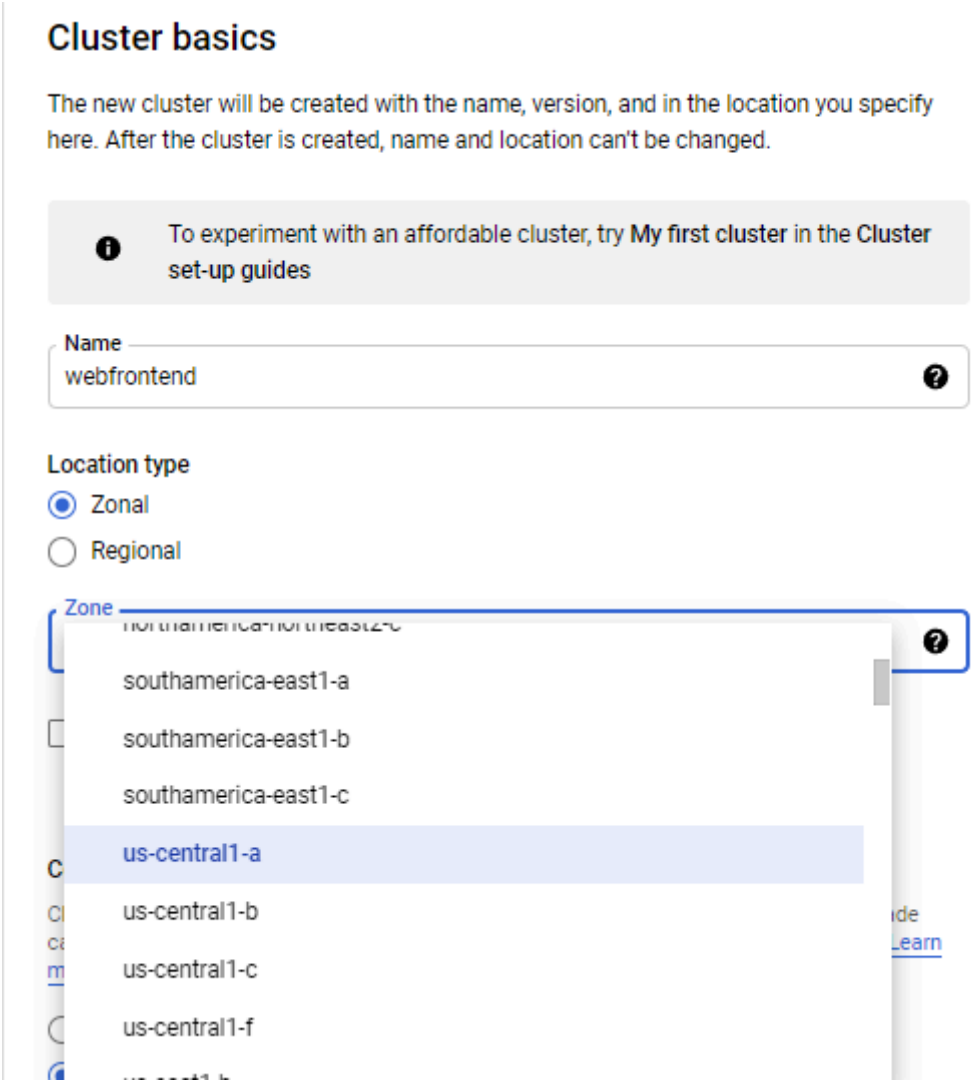






Cluster basics 에서 클러스터 기본적인 것을 설정한다.

GKE Standard 모드로 생성한다.



1) 마이크로서비스를 올릴 것이기에 이름을 webfrontend로 한다.

2)

- 내가 클러스터를 생성 시 노드들을 하나의 zone에 몰어넣겠다.
- 해당하는 Region에 있는 zone에 3개 ~ 4개에 노드들을 분산배치하겠다.

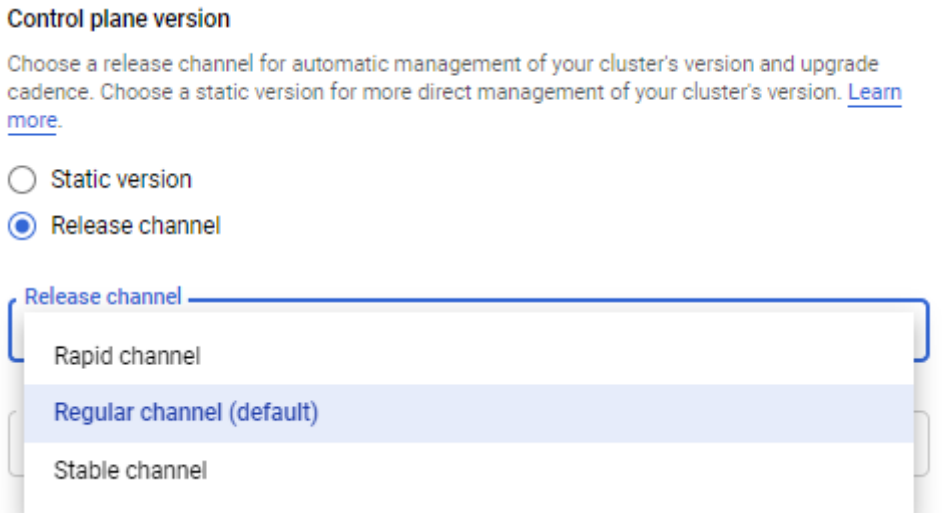
3) 마스터 노드에 해당하는 쿠버네티스의 업데이트를 어떻게 가져갈 것인가?

업데이트 전략을 직접 설정한다.

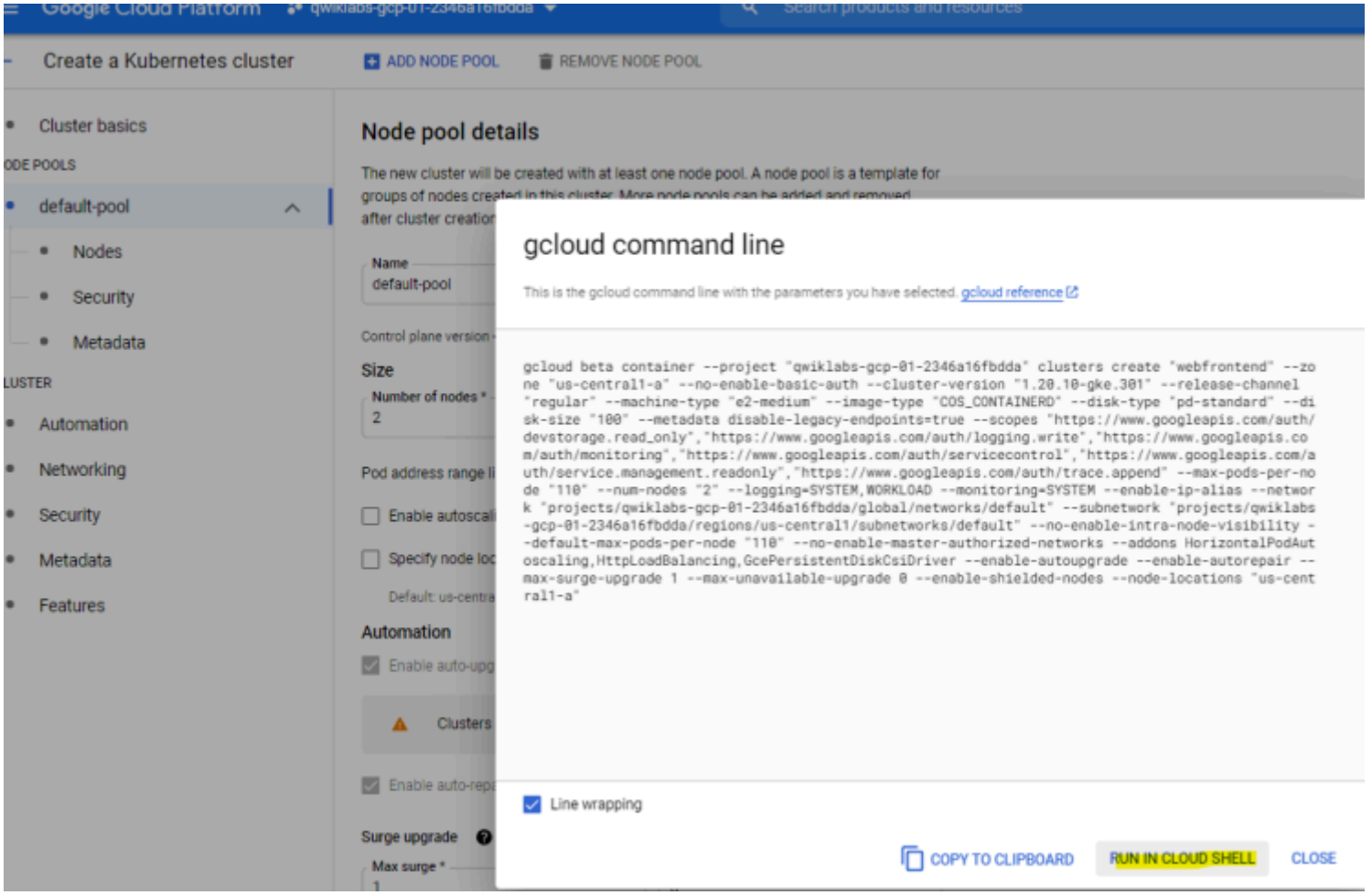
- Static 업데이트 하지 않고 가져가겠다.
- Release channel

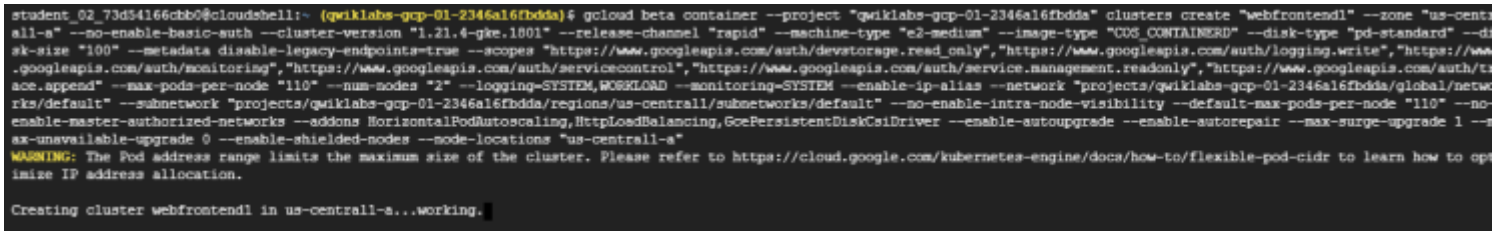
Rapid 가능한 최신이 쿠버네티스 버전으로 업데이트 하겠다.

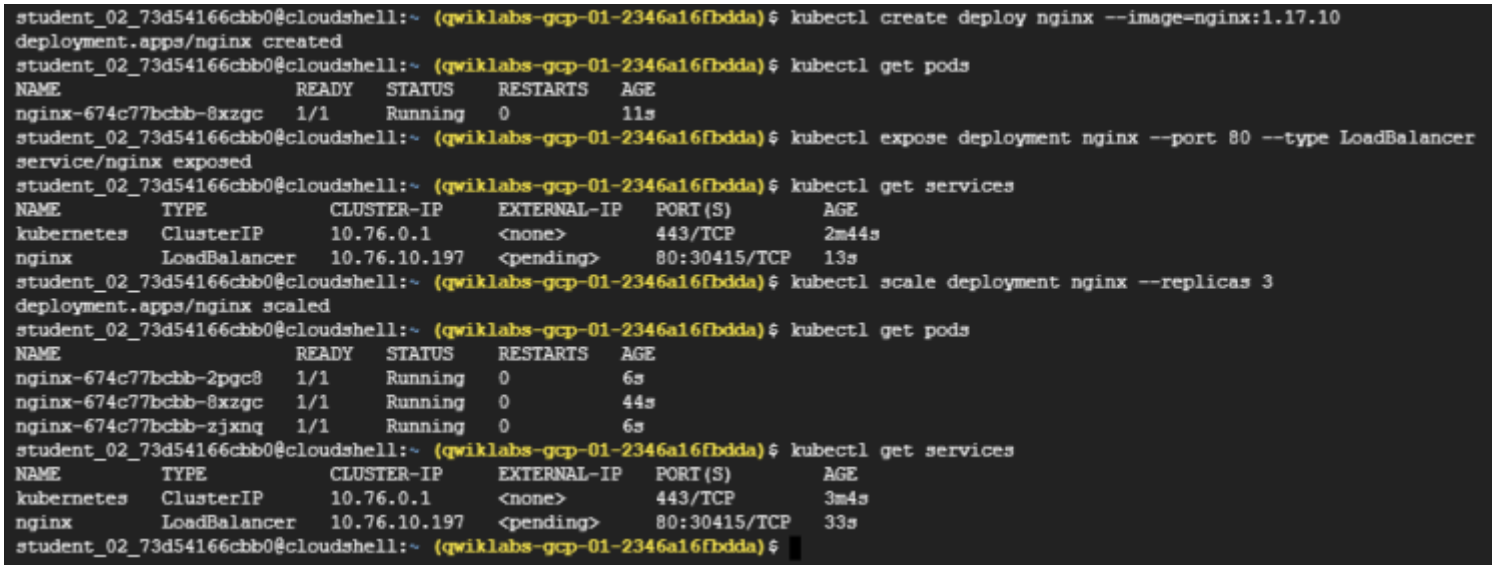
Stable 안정적인 쿠버네티스 버전을 선택하겠다.



설정한대로 설정할 수 있는 명령어







1) kubectl create deploy nginx --image-nginx:1.17.10 단일 nginx container 인스턴스를 생성한다.

쿠버네티스에서는 모든 containers는 pods 안에서 실행된다.

kubetl create 명령은 nginx container를 컨테이닝 하는 단일 pod의 배포구성을 생성하기 위해 쓴다.

쿠버네티스 배포는 지정된 수의 pods를 유지한다.

위 명령으로 기본적인 pods 1개를 생성한다.

2) kubectl get pods

nginx container를 실행중인 pods 를 확인한다.

3) kubectl expose deployment nginx --port 80 --type LoadBalancer

쿠버네티스는 서비스와 그 서비스에 public IP address가 부여된 외부 로드 밸런서를 생성한다.

해당 서비스에 부여된 public IP address는 서비스 종료 전까지 유지된다.

해당 public IP address로 들어오는 모든 네트워크 트래픽은 niginx pods로 라우팅된다.

4) kubectl get services

테스트를 위한 외부 IP address를 보여줄 수 있으며, 원격 nginx container와도 접촉할 수 있다.

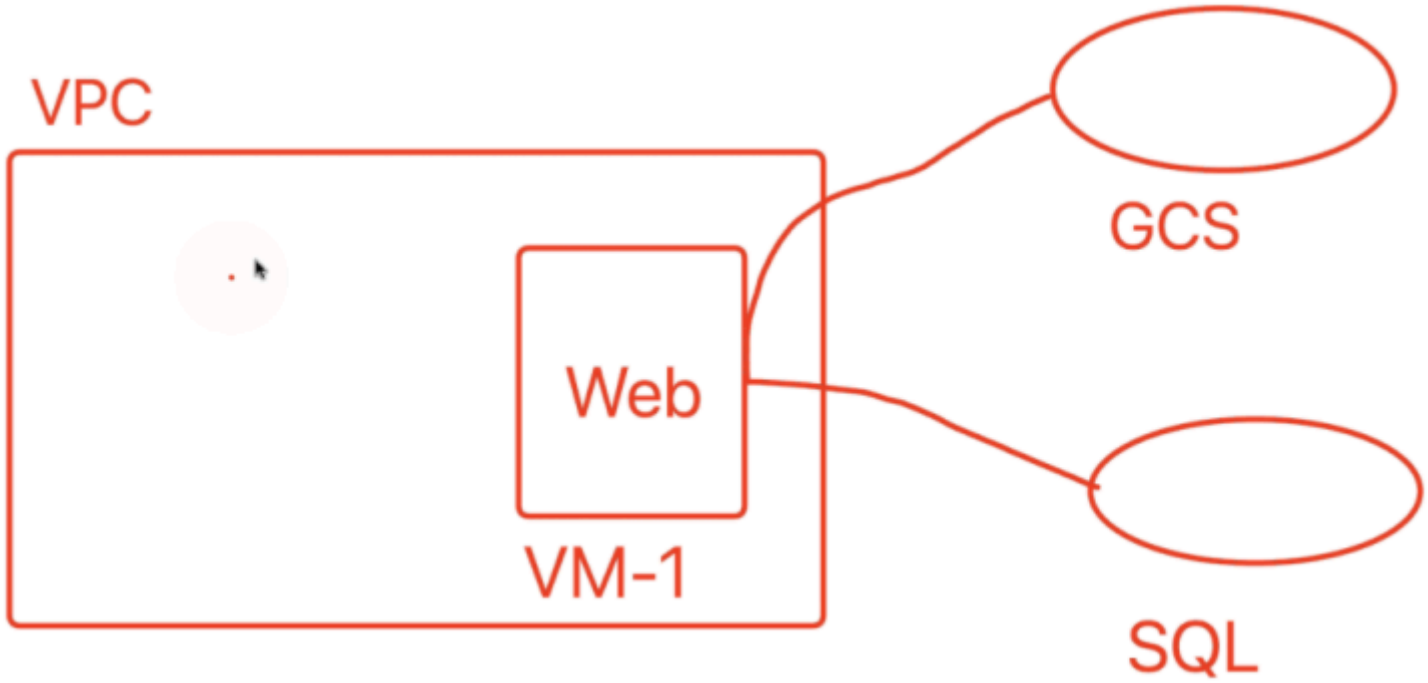
#실습3 Google Cloud 기초: Cloud Storage 및 Cloud SQL 시작하기

Cloud Storage = Object Storage

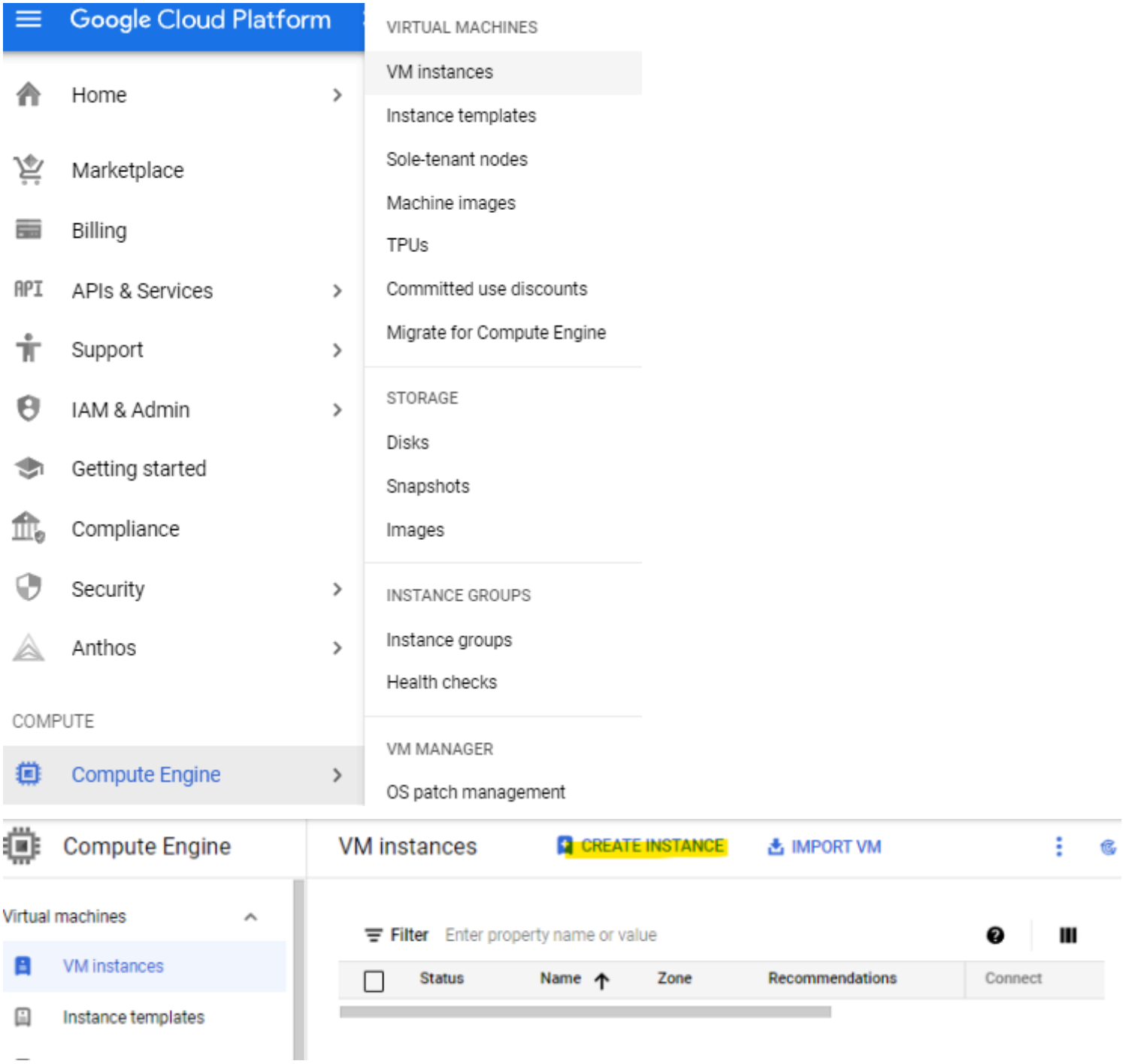
Cloud SQL = Managed RDBMS

object storage 에 있는 파일은 굉장히 접근이 쉽다.

시나리오: GCS(Google Cloud Storage)와 SQL을 생성하고, 이를 vm-1의 웹서버와 연결하도록 한다.



웹 서버 VM 인스턴스 배포하자.

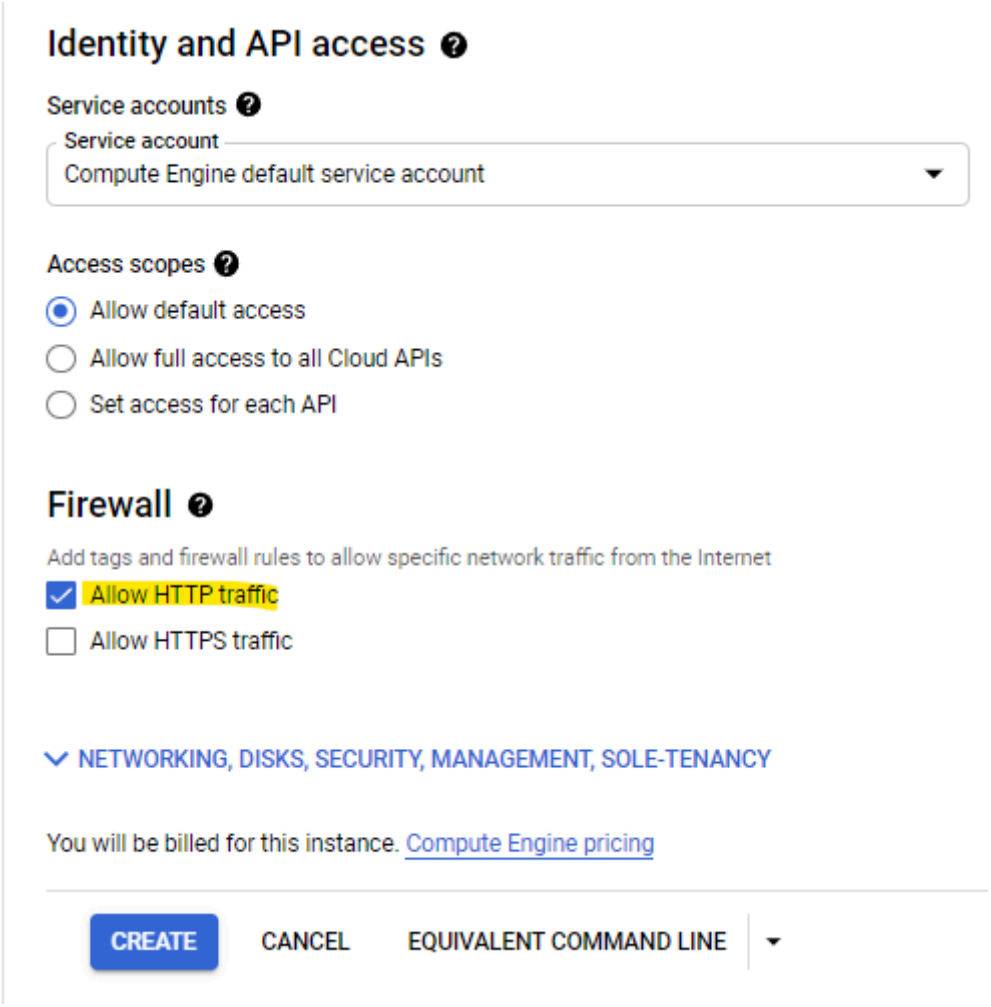


1) bloghost로 이름 설정

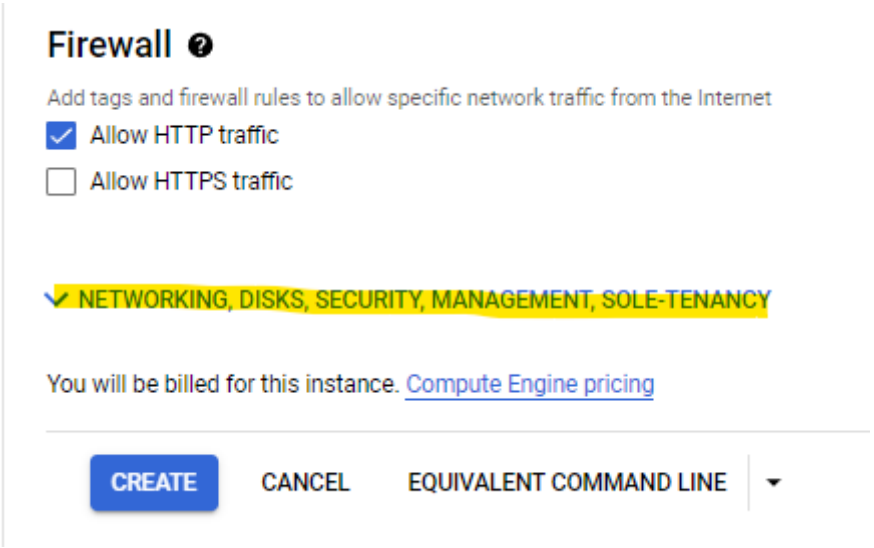
웹서버 역할을 하는 호스트가 blog이기 때문에

2) 모두 기본값으로 Region 및 Zone 둔다.

3) 방화벽



startup Script 기능은 VM이 배치되자마자 바로 script가 실행되도록 하는 기능이다.



Startup script에 Quicwklabs에서 가져온 스크립트를 가져와 넣는다.

Management

Description, deletion protection, reservations, automation, and availability policies

bil

Description

Deletion protection

Enable deletion protection

Reservations

Automatically use created reservation

Use an existing reservation when creating this VM instance

Automation

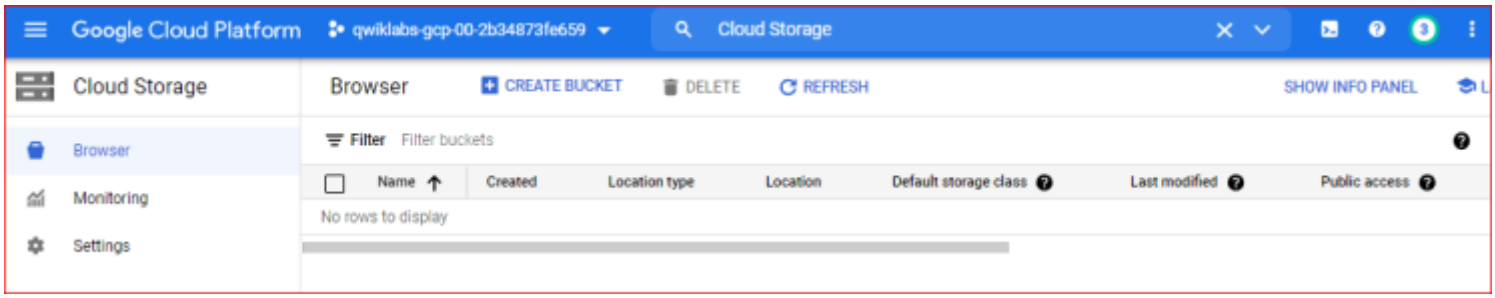
Startup script

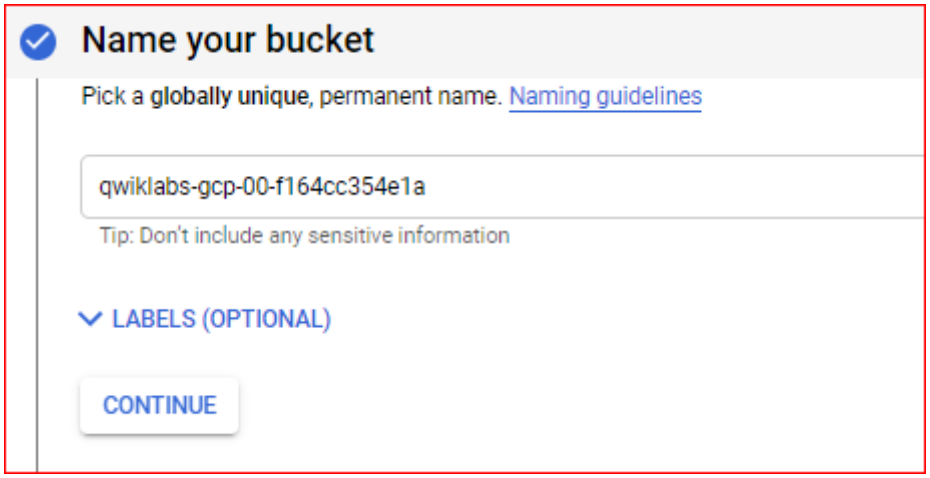
```
apt-get update
apt-get install apache2 php php-mysql -y
service apache2 restart
```

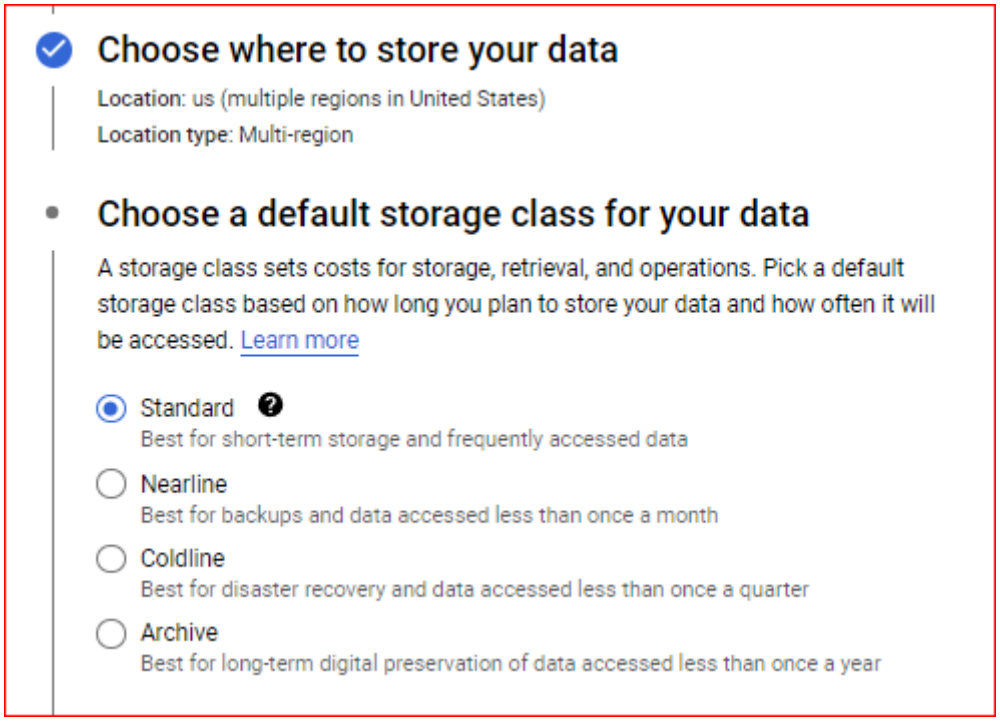
You can choose to specify a startup script that will run when your instance boots up or restarts. Startup scripts can be used to install software and updates, and to ensure that services are running within the virtual machine. Learn more

gsutil 명령줄을 사용하여 Cloud Storage 버킷 만들기를 해본다.

cloud storage 페이지로 넘어간다.



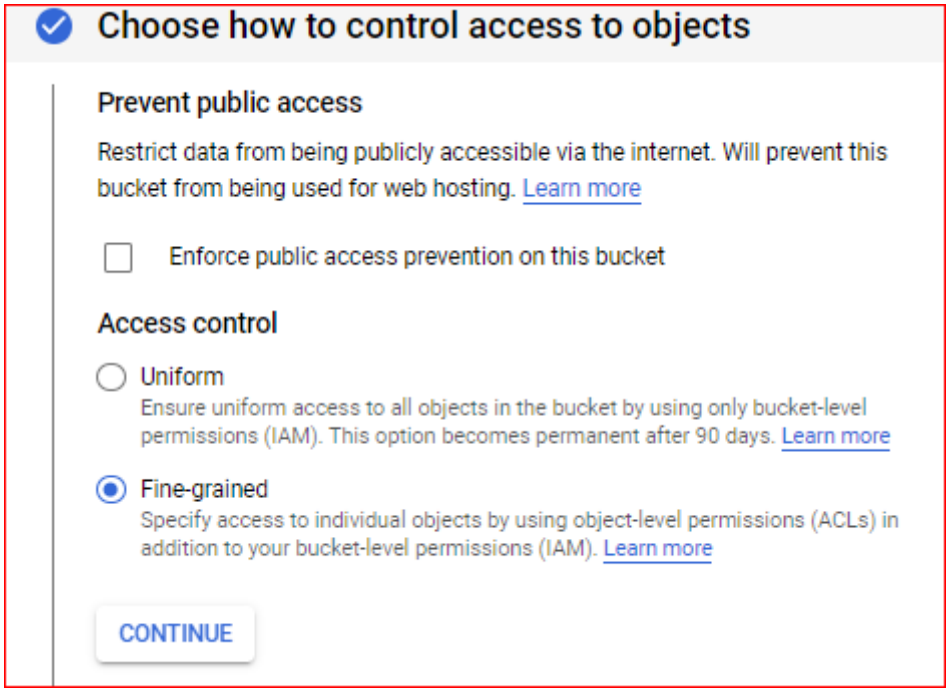


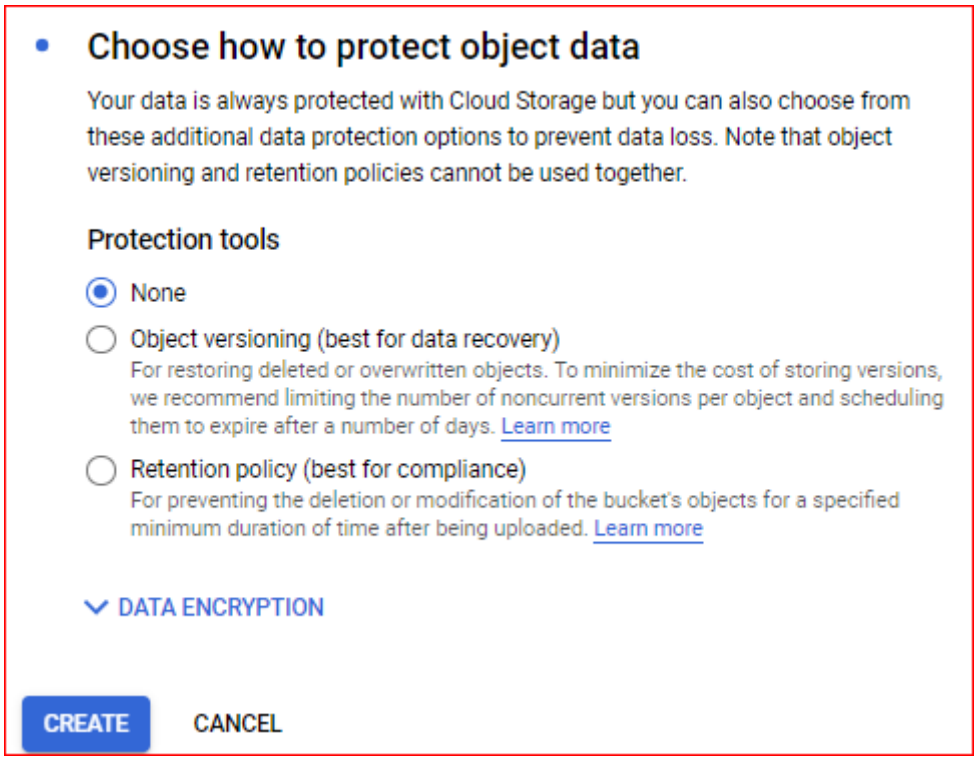


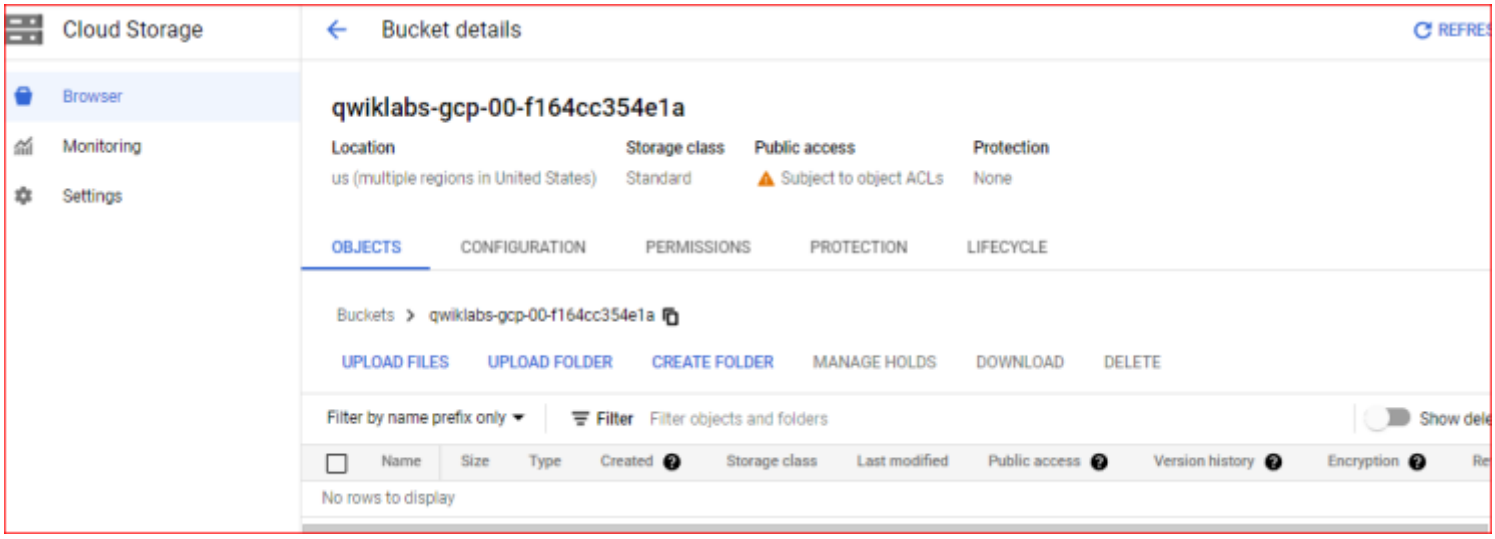
control access to objects 는 접근제어를 선택할 수 없는 옵션이다.

- uniform : 접근제어를 bucket단위로

- Fine-grained: object단위에서 uniform보다 더 세세히 접근제어할 수 있다.


Choose how to control access to objects
Prevent public access
Restrict data from being publicly accessible via the internet. Will prevent this bucket from being used for web hosting. Learn more
Enforce public access prevention on this bucket
Access control
Uniform
Ensure uniform access to all objects in the bucket by using only bucket-level permissions (IAM). This option becomes permanent after 90 days. Learn more
Fine-grained
Specify access to individual objects by using object-level permissions (ACLs) in addition to your bucket-level permissions (IAM). Learn more
CONTINUE


Choose how to protect object data
Your data is always protected with Cloud Storage but you can also choose from these additional data protection options to prevent data loss. Note that object versioning and retention policies cannot be used together.
Protection tools
None
Object versioning (best for data recovery)
For restoring deleted or overwritten objects. To minimize the cost of storing versions, we recommend limiting the number of noncurrent versions per object and scheduling them to expire after a number of days. Learn more
Retention policy (best for compliance)
For preventing the deletion or modification of the bucket's objects for a specified minimum duration of time after being uploaded. Learn more
DATA ENCRYPTION
CREATE
CANCEL



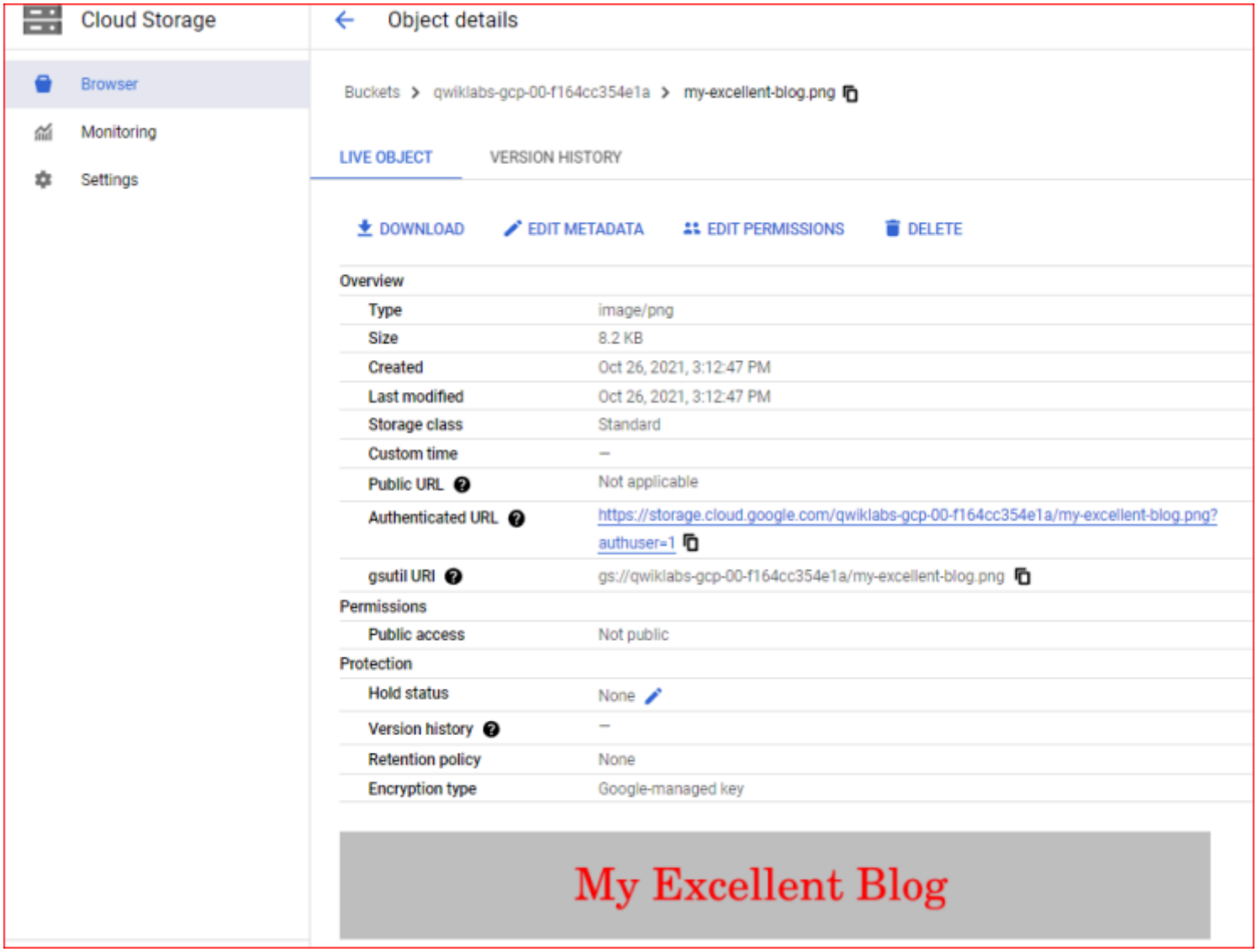
로컬에 있는 파일들을 'UPLOAD FILES'로 버켓에 업로드 할 수 있다. 또는 끌어다가 놓을 수 있다.

Cloud Shell누군가가 만들어놓은 bucket image파일을 다운받아 업로드해본다.

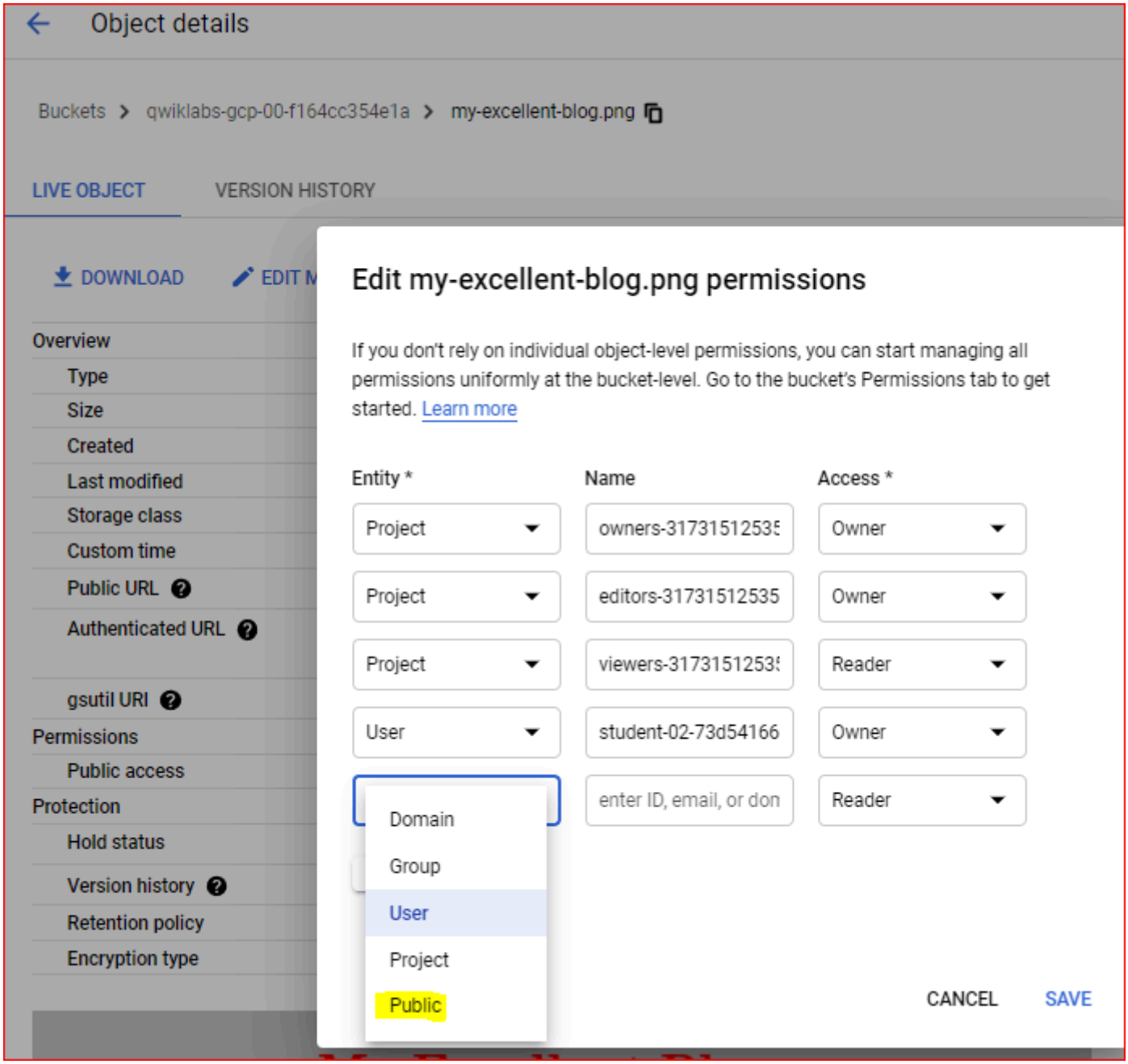
```
student_02_73d54166cbb0@cloudshell:~ (qwiklabs-gcp-00-2b34873fe659)$ gsutil cp gs://cloud-training/gcpfci/my-excellent-blog.png my-excellent-blog.png
Copying gs://cloud-training/gcpfci/my-excellent-blog.png...
/ [1 files][  8.2 KiB/  8.2 KiB]
Operation completed over 1 objects/8.2 KiB.
student_02_73d54166cbb0@cloudshell:~ (qwiklabs-gcp-00-2b34873fe659)$ ls
my-excellent-blog.png  README-cloudshell.txt
```

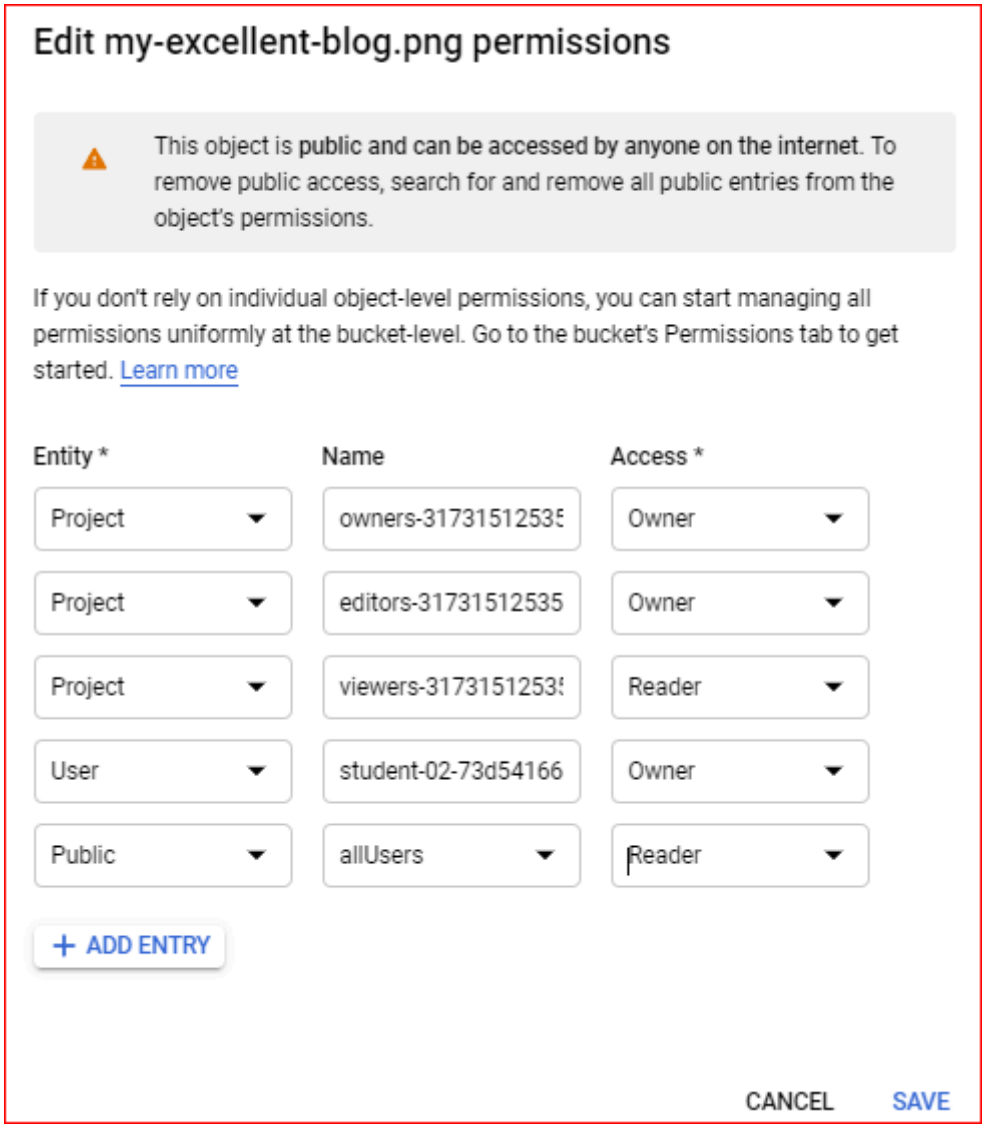
새로 만든 Cloud Storage 버킷(qwiklabs-gcp-00-f164cc354e1a)에 배너 이미지를 복사한다.

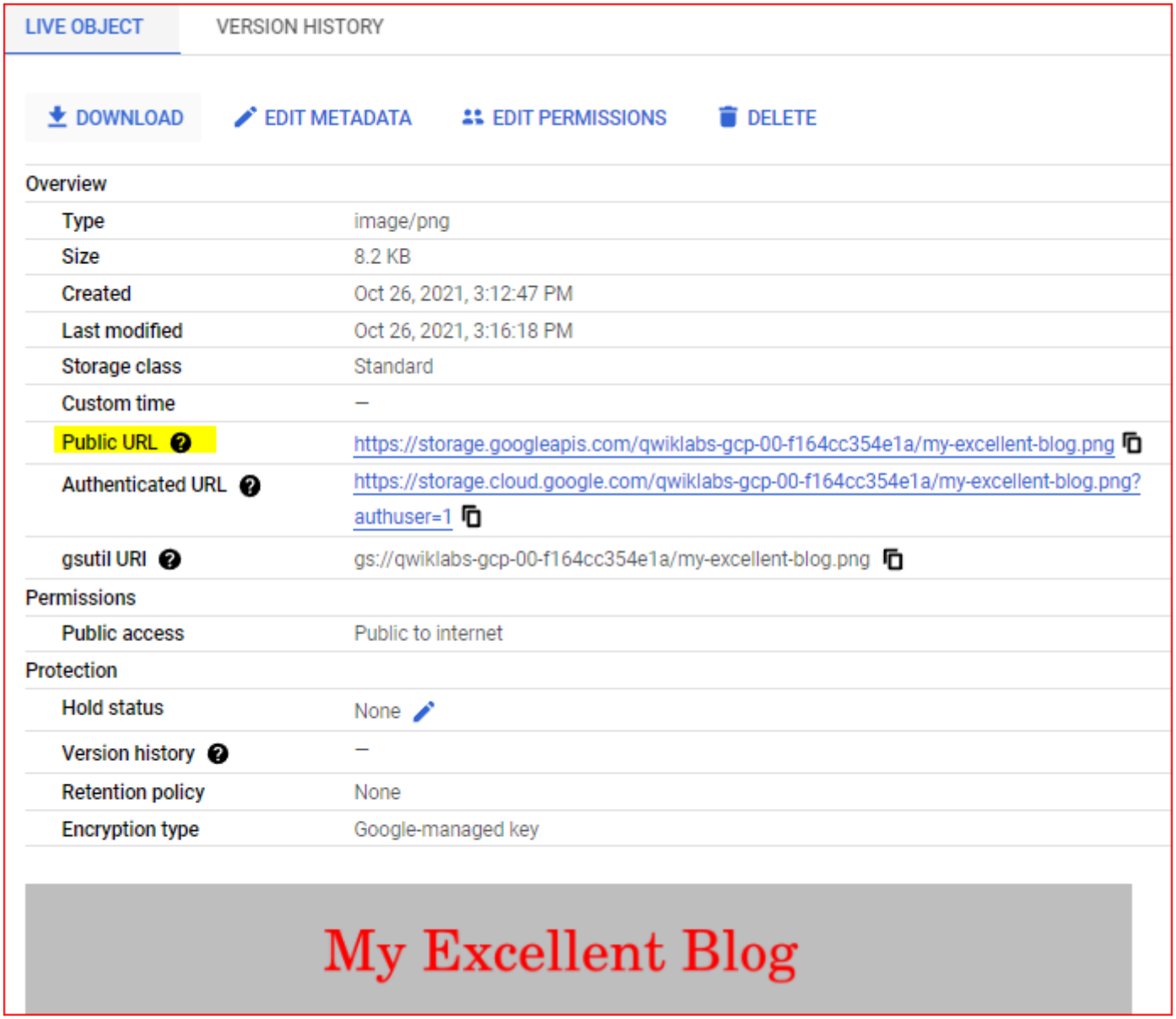
```
student_02_73d54166cbb0@cloudshell:~ (qwiklabs-gcp-00-2b34873fe659)$ gsutil cp my-excellent-blog.png gs://qwiklabs-gcp-00-f164cc354e1a/my-excellent-blog.png
Copying file://my-excellent-blog.png [Content-Type=image/png]...
/ [1 files][  8.2 KiB/  8.2 KiB]
Operation completed over 1 objects/8.2 KiB.
```



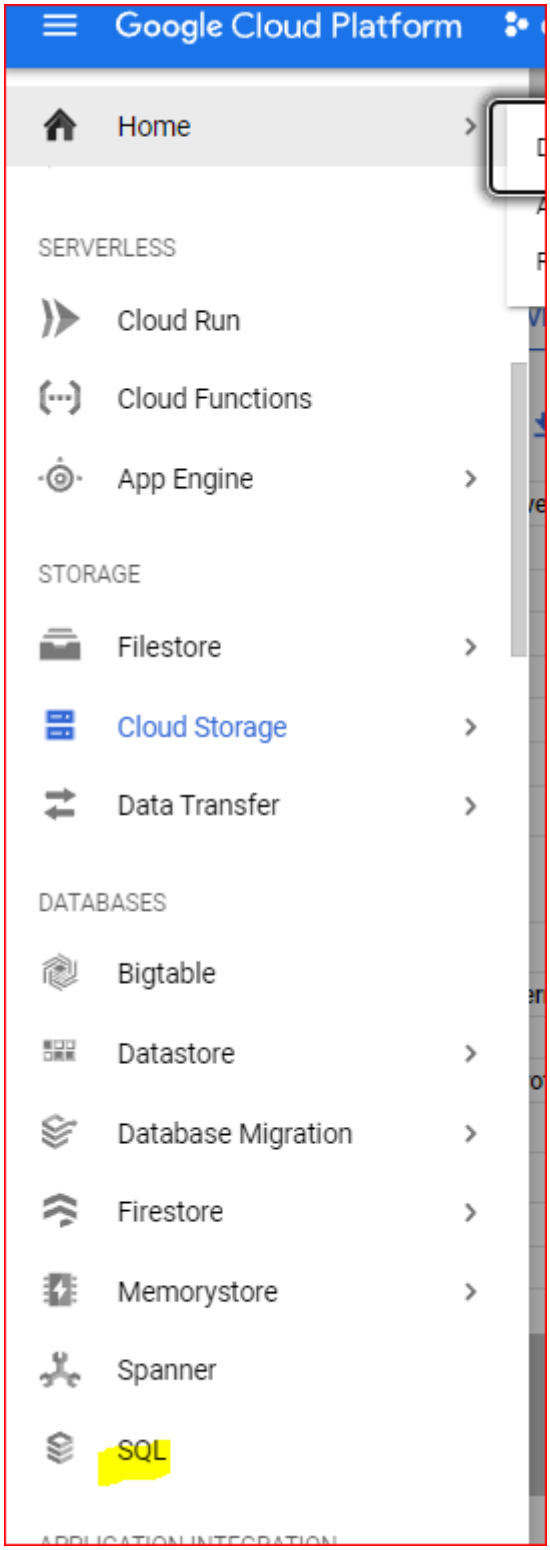
Public URL 을 사용가능하도록 하기위해 Permissions를 설정한다.


Object details
Buckets > qwiklabs-gcp-00-f164cc354e1a > my-excellent-blog.png
LIVE OBJECT
VERSION HISTORY
DOWNLOAD
EDIT M
Overview
Type
Size
Created
Last modified
Storage class
Custom time
Public URL
Authenticated URL
gsutil URI
Permissions
Public access
Protection
Hold status
Version history
Retention policy
Encryption type
Edit my-excellent-blog.png permissions
If you don't rely on individual object-level permissions, you can start managing all permissions uniformly at the bucket-level. Go to the bucket's Permissions tab to get started. Learn more
Entity *
Name
Access *
Project
owners-3173151253
Owner
Project
editors-31731512535
Owner
Project
viewers-3173151253
Reader
User
student-02-73d54166
Owner
enter ID, email, or don
Reader
Domain
Group
User
Project
Public
CANCEL
SAVE


Edit my-excellent-blog.png permissions
This object is public and can be accessed by anyone on the internet. To remove public access, search for and remove all public entries from the object's permissions.
If you don't rely on individual object-level permissions, you can start managing all permissions uniformly at the bucket-level. Go to the bucket's Permissions tab to get started. Learn more
Entity *
Name
Access *
Project
owners-3173151253
Owner
Project
editors-31731512535
Owner
Project
viewers-3173151253
Reader
User
student-02-73d54166
Owner
Public
allUsers
Reader
ADD ENTRY
CANCEL
SAVE



Cloud Storage 생성하기


Google Cloud Platform
Home
SERVERLESS
Cloud Run
Cloud Functions
App Engine
STORAGE
Filestore
Cloud Storage
Data Transfer
DATABASES
Bigtable
Datastore
Database Migration
Firestore
Memorystore
Spanner
SQL

1) 웹서버 역할을 하는 db 라는 이름

2) 패스워드 지정

3) 데이터베이스 버전 MySQL 5.6

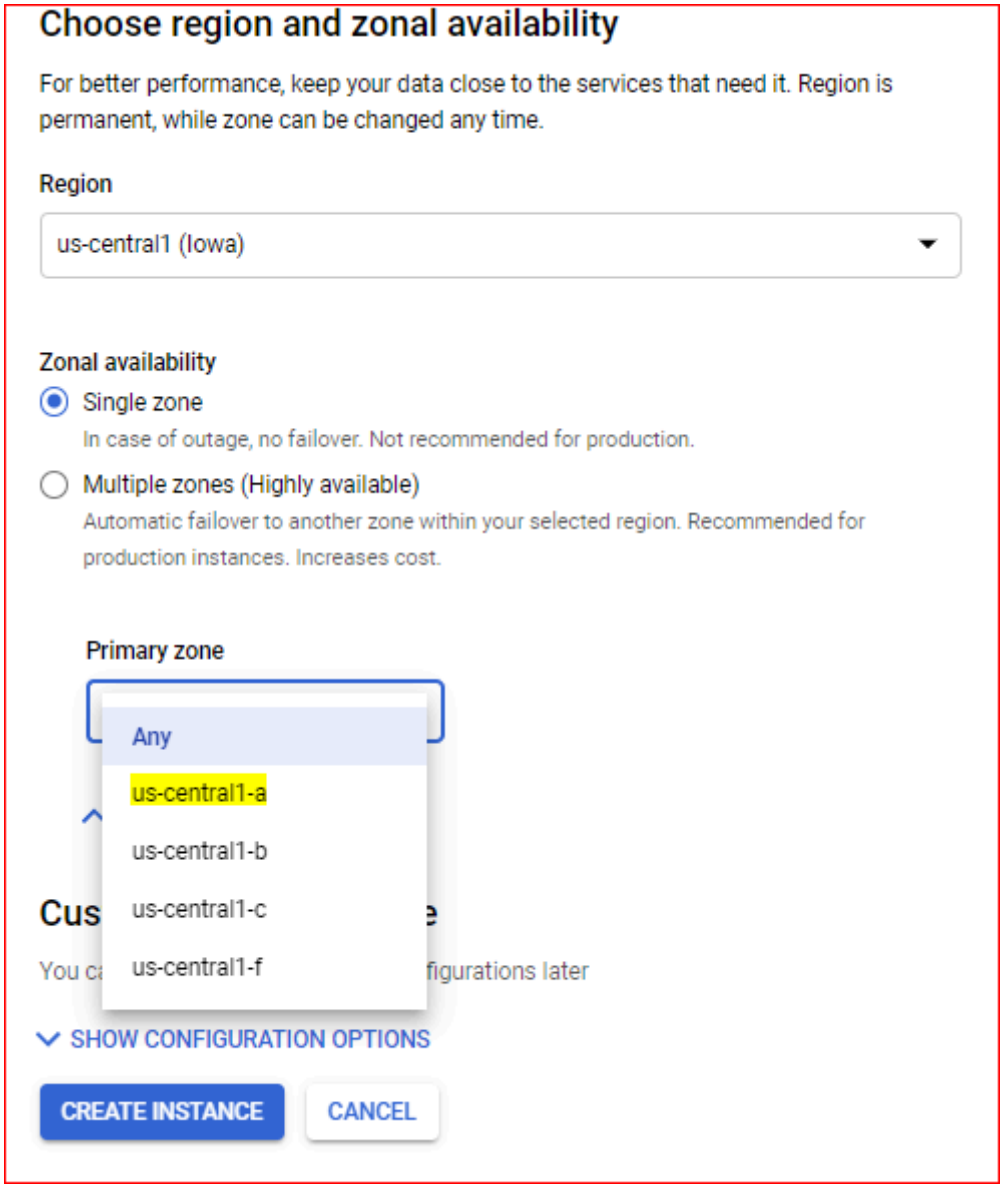
4)

- multiple zones

A존 -> B존으로 Failover해서 A존에 있던 걸 바로 사용할 수 있도록 한다.(가용성)

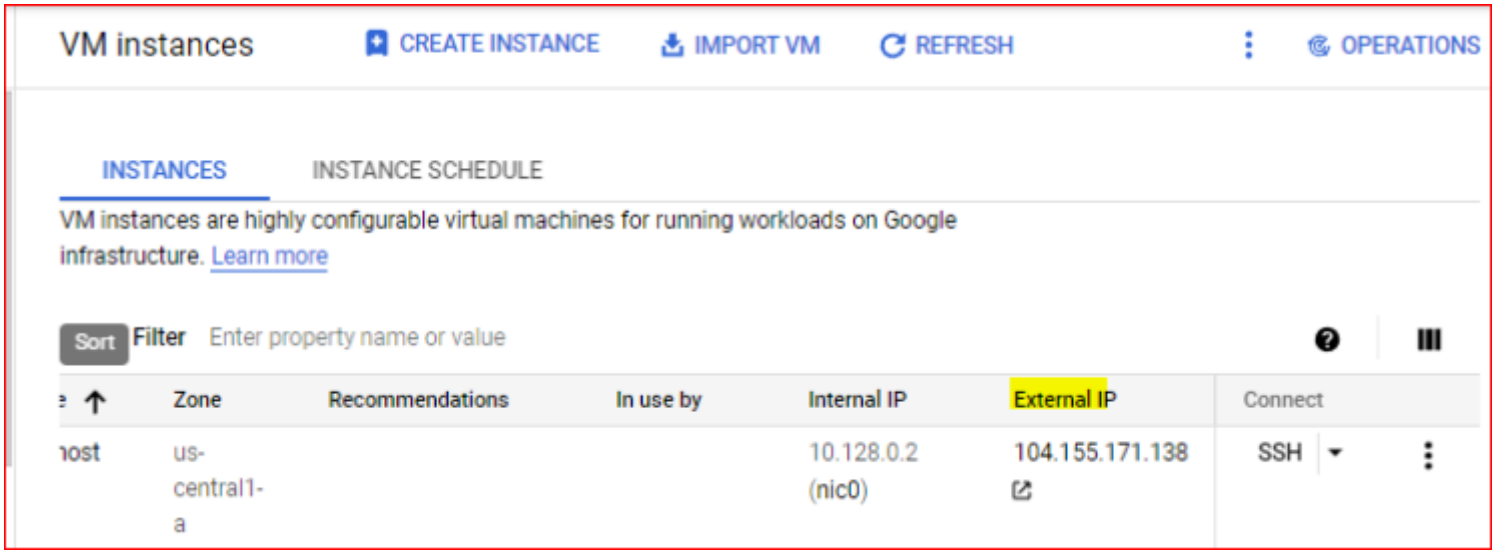
5) Specify zones 에서는 us-central-a 라는 존에 vm을 생성했는데,

같은 데이터 센터 내에 위치하도록 하면 빠른 속도를 보장한다.

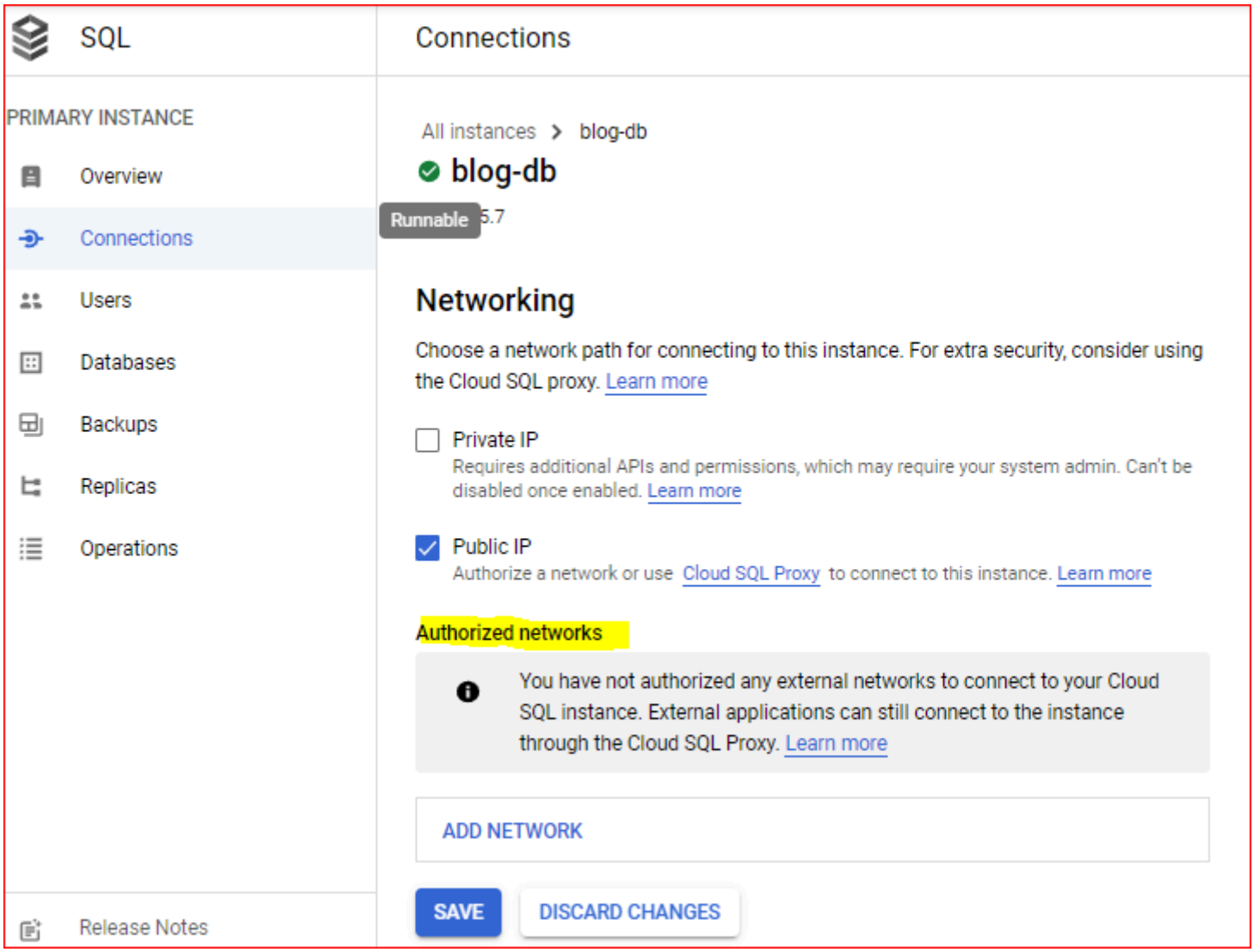


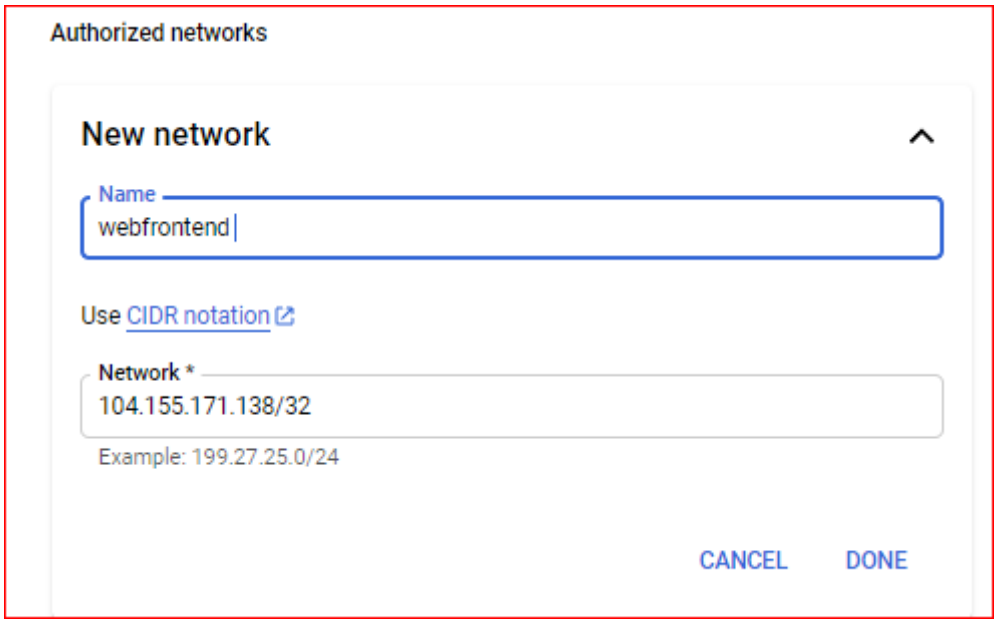
외부에서 들어오는 모든 접속을 기본적으로 차단하는데 , 허가된 IP list들만 Cloud IP에 설정해야 한다.

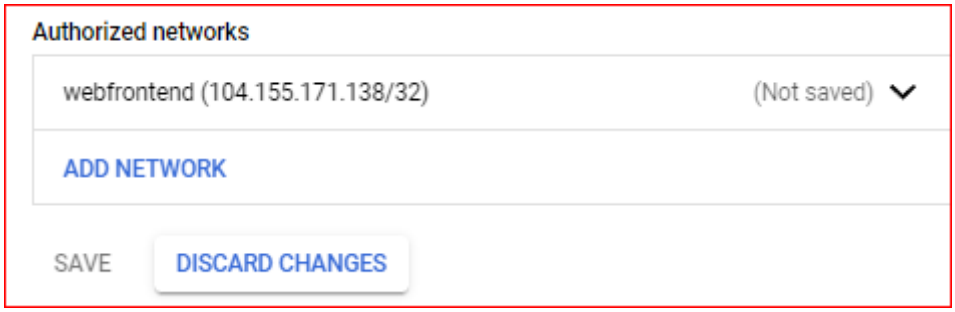
Computer Engine > VM instances 에 가서 bloghost의 External IP 주소를 복사한다.



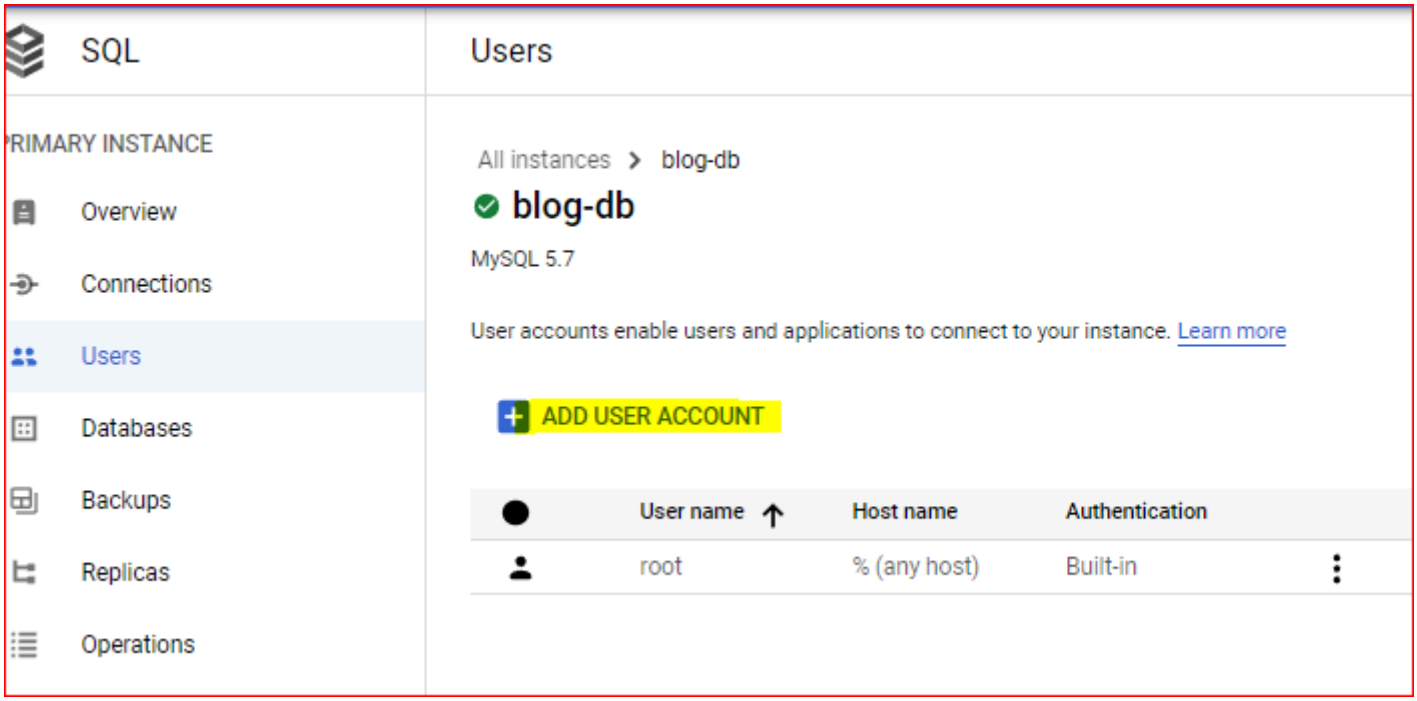
IP White listing 작업을 한다.

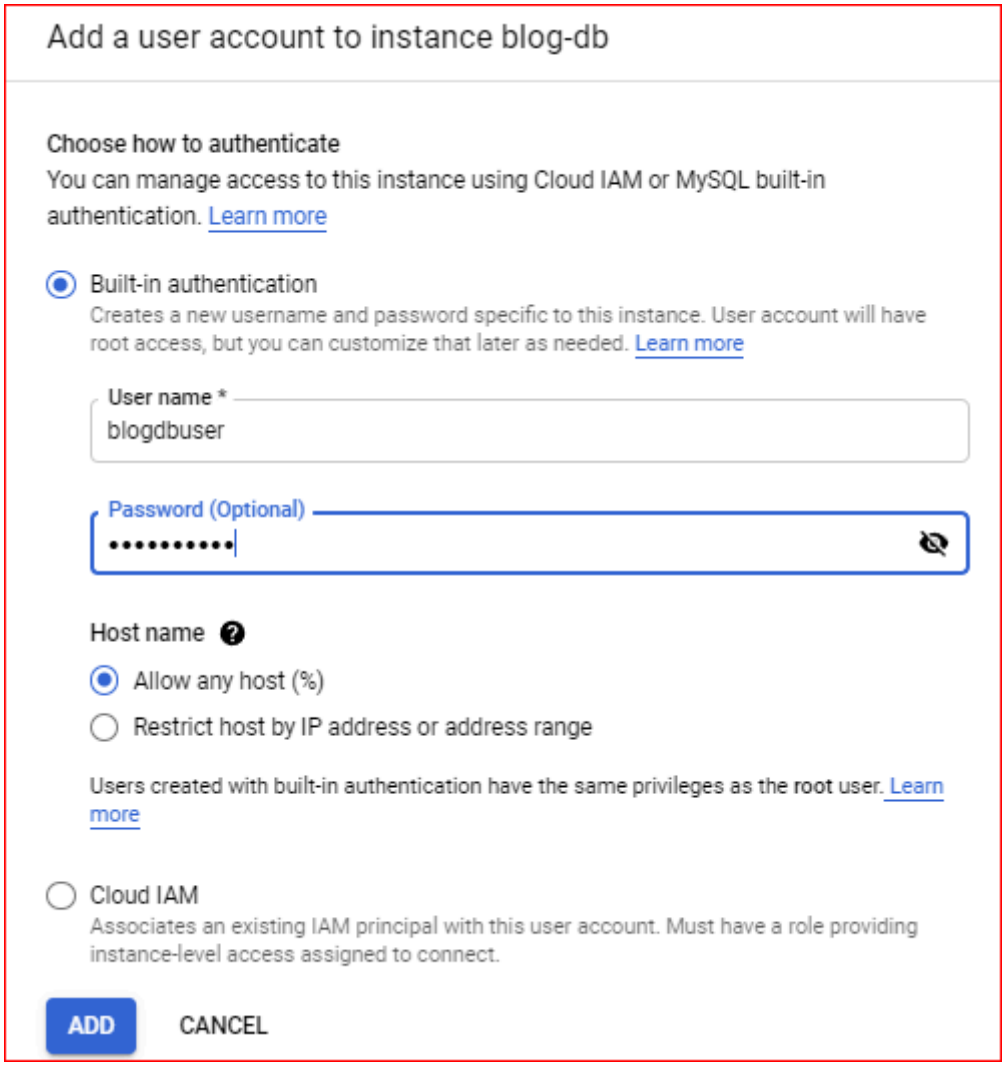


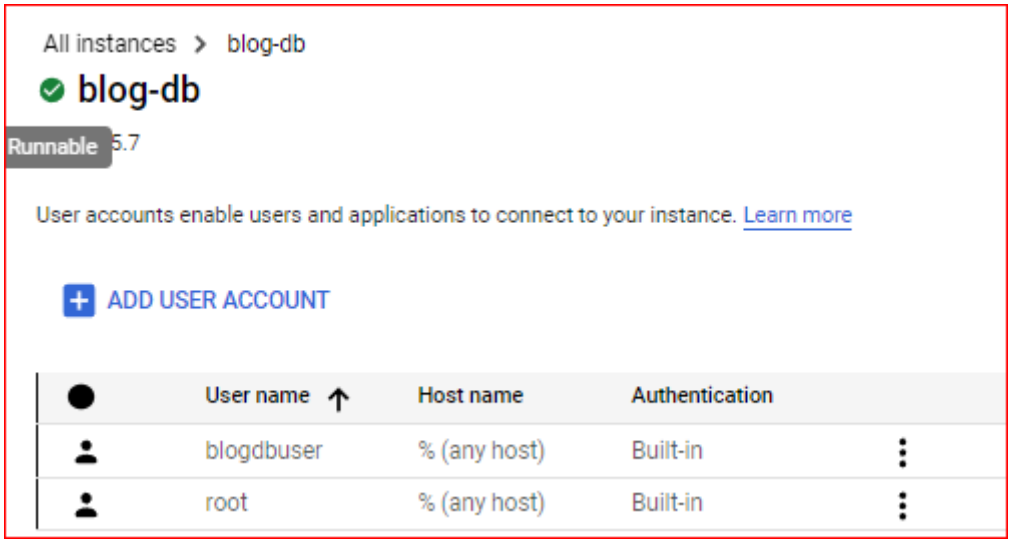




Cloud SQL은 vm 인스턴스에서 날라오는 것을 Allow해줄 수 있게 되었다.

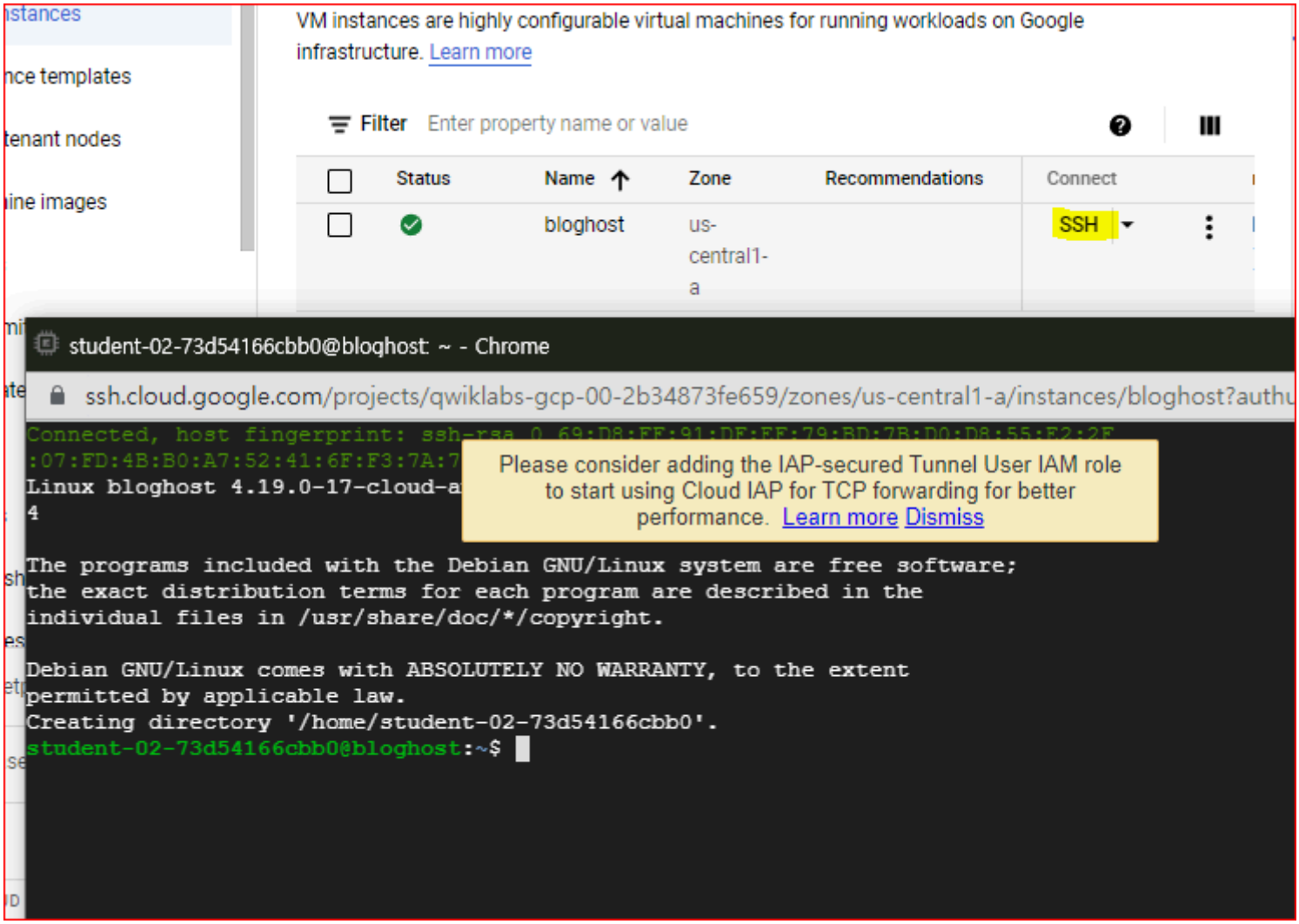


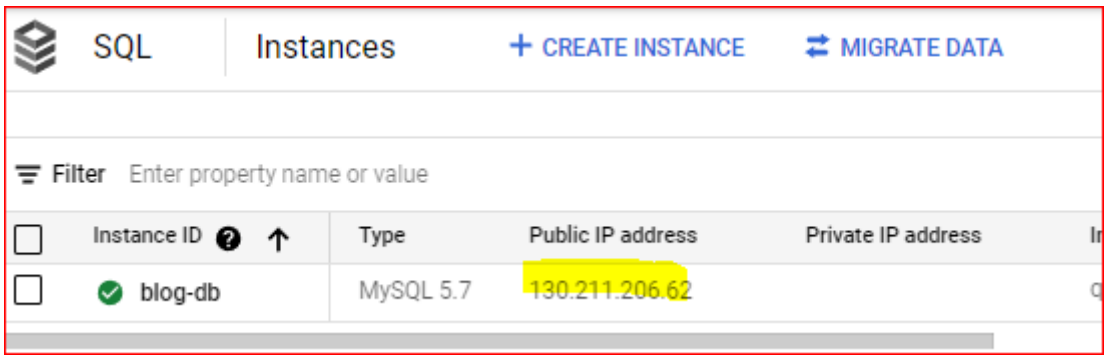




Cloud SQL을 사용하도록 Compute Engine 인스턴스의 애플리케이션 구성하기

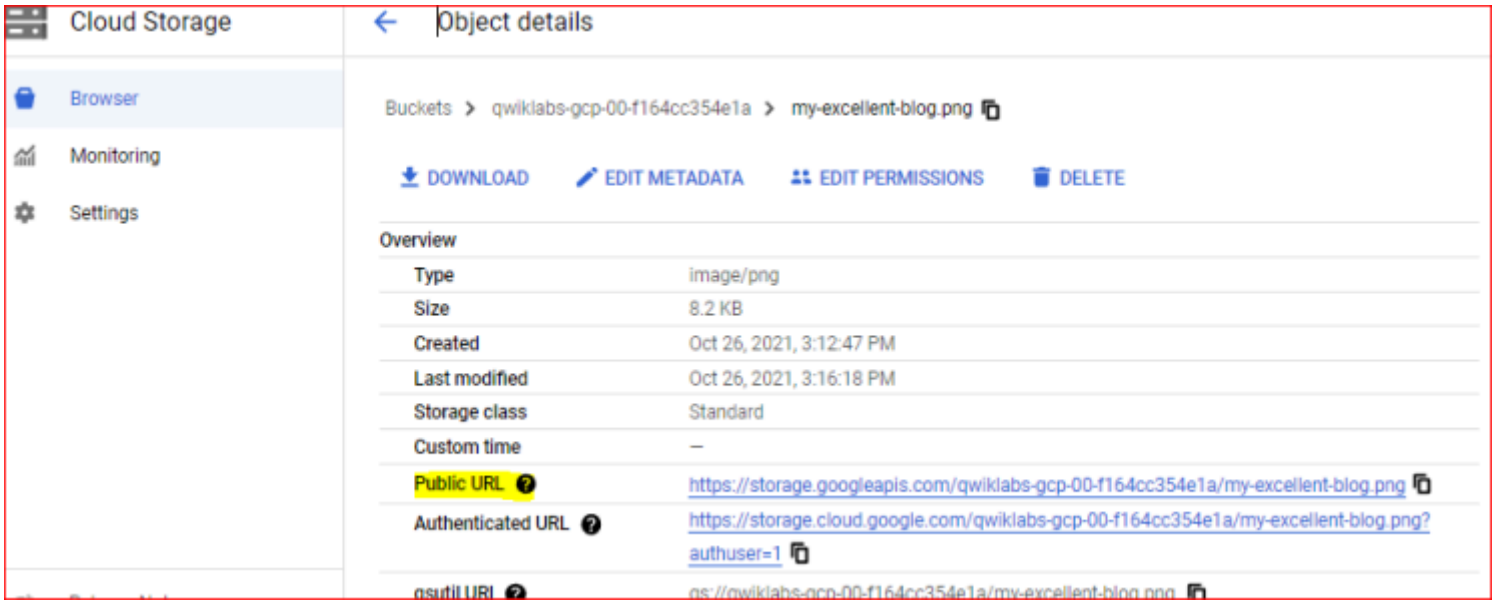
bloghost로 ssh 접속한다.


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
Connect
bloghost
us-central1-a
SSH
student-02-73d54166cbb0@bloghost: ~ - Chrome
ssh.cloud.google.com/projects/qwiklabs-gcp-00-2b34873fe659/zones/us-central1-a/instances/bloghost?authu
Please consider adding the IAP-secured Tunnel User IAM role to start using Cloud IAP for TCP forwarding for better performance. Learn more Dismiss
Linux bloghost 4.19.0-17-cloud-a
4
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.
Creating directory '/home/student-02-73d54166cbb0'.
student-02-73d54166cbb0@bloghost:~$


SQL
Instances
+ CREATE INSTANCE
MIGRATE DATA
Filter Enter property name or value
Instance ID
Type
Public IP address
Private IP address
blog-db
MySQL 5.7
130.211.206.62

```
  GNU nano 3.2

<body>
<h1>Welcome to my excellent blog</h1>
<?php
 $dbserver = "CLOUDSQLIP";
$dbuser = "blogdbuser";
$dbpassword = "DBPASSWORD";
// In a production blog, we would not store the MySQL
// password in the document root. Instead, we would store it in a
// configuration file elsewhere on the web server VM instance.
$conn = new mysqli($dbserver, $dbuser, $dbpassword);
if (mysqli_connect_error()) {
        echo ("Database connection failed: " . mysqli_connect_error());
} else {
        echo ("Database connection succeeded.");
}
?>
</body></html>
```

4째 라인을 지우고 Cloud Storage object의 주소를 넣는다.



public

Ctrl + O 저장 > Enter -> Ctrl + X로 종료

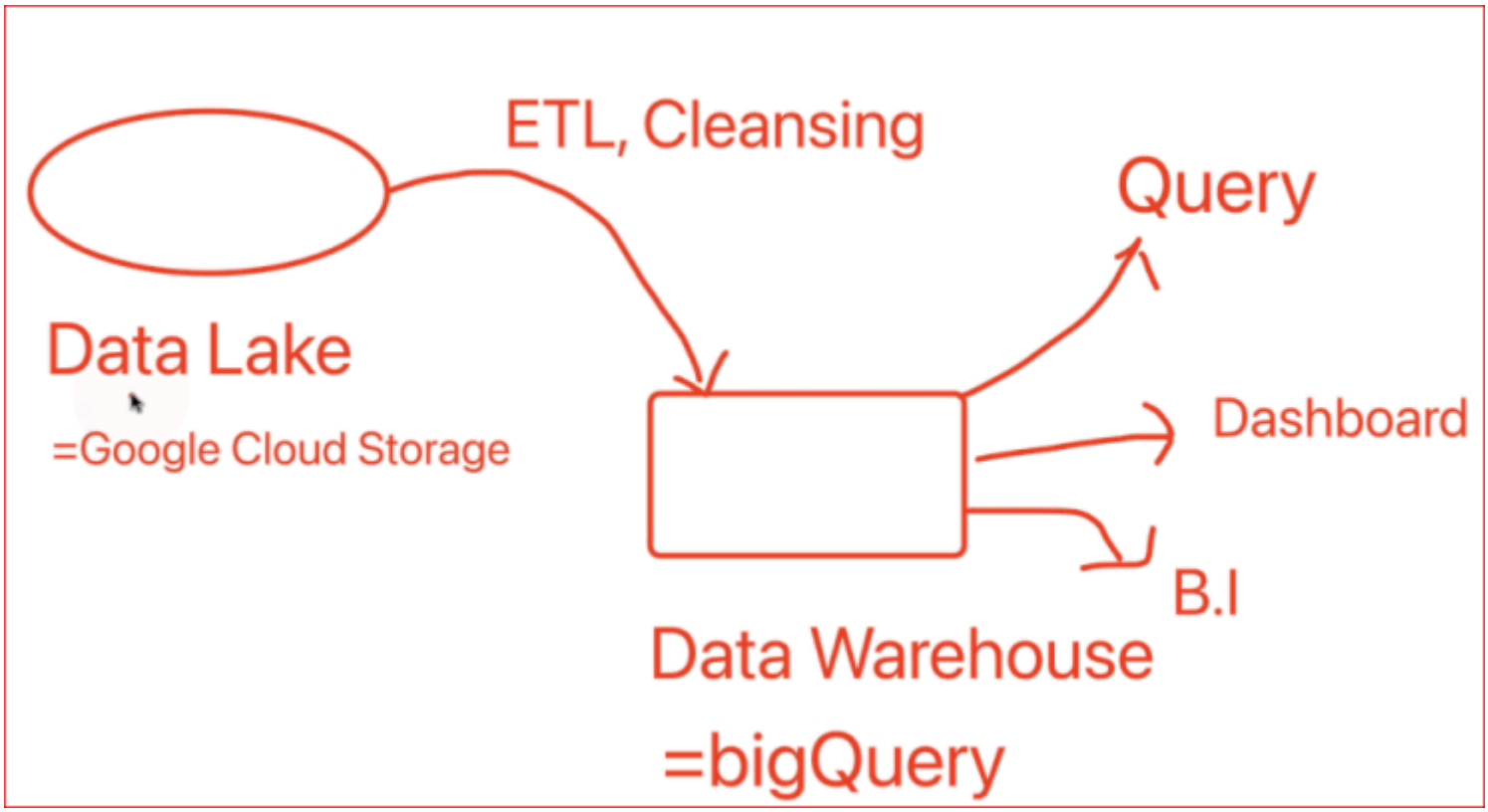
sudo service apache2 restart를 해준다.

#실습4 Google Cloud Fundamentals: Getting Started with BigQuery

Data Lake 에서 Data Warehouse로 옮기는 과정(ETL, Cleansing)을 하면, Data Warehouse에서 Query 질의,

Dashboard 그림을 그리거나, B.I 툴을 사용해서 레포트를 그릴 수 있다.

Cloud Big Query는 Data Warehous 서비스이다.

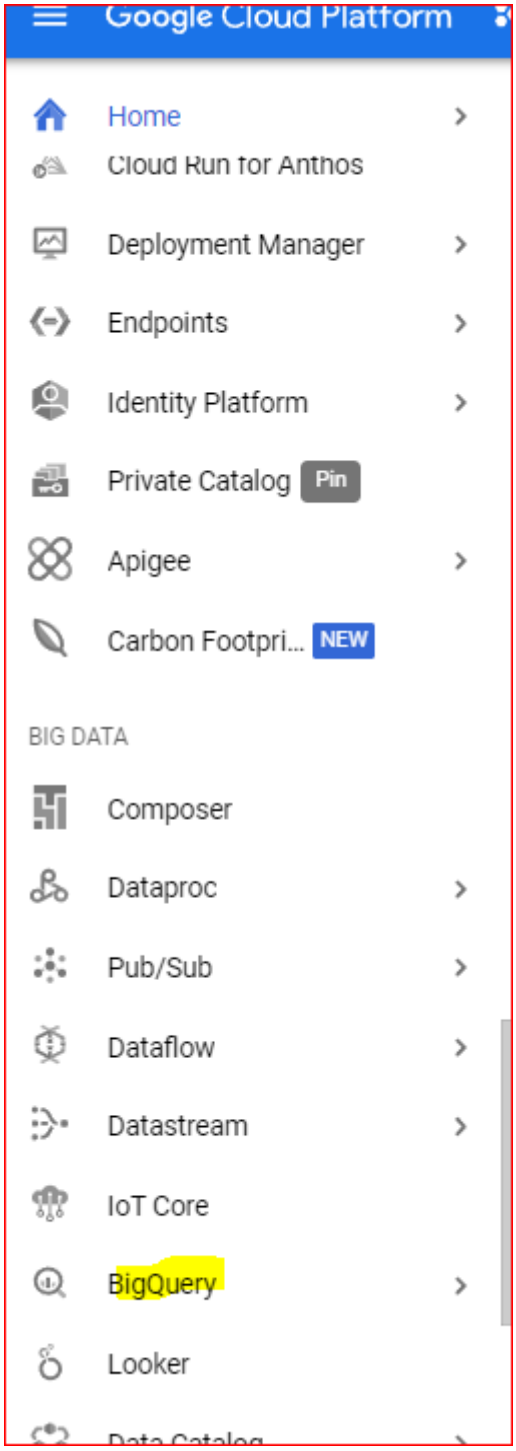


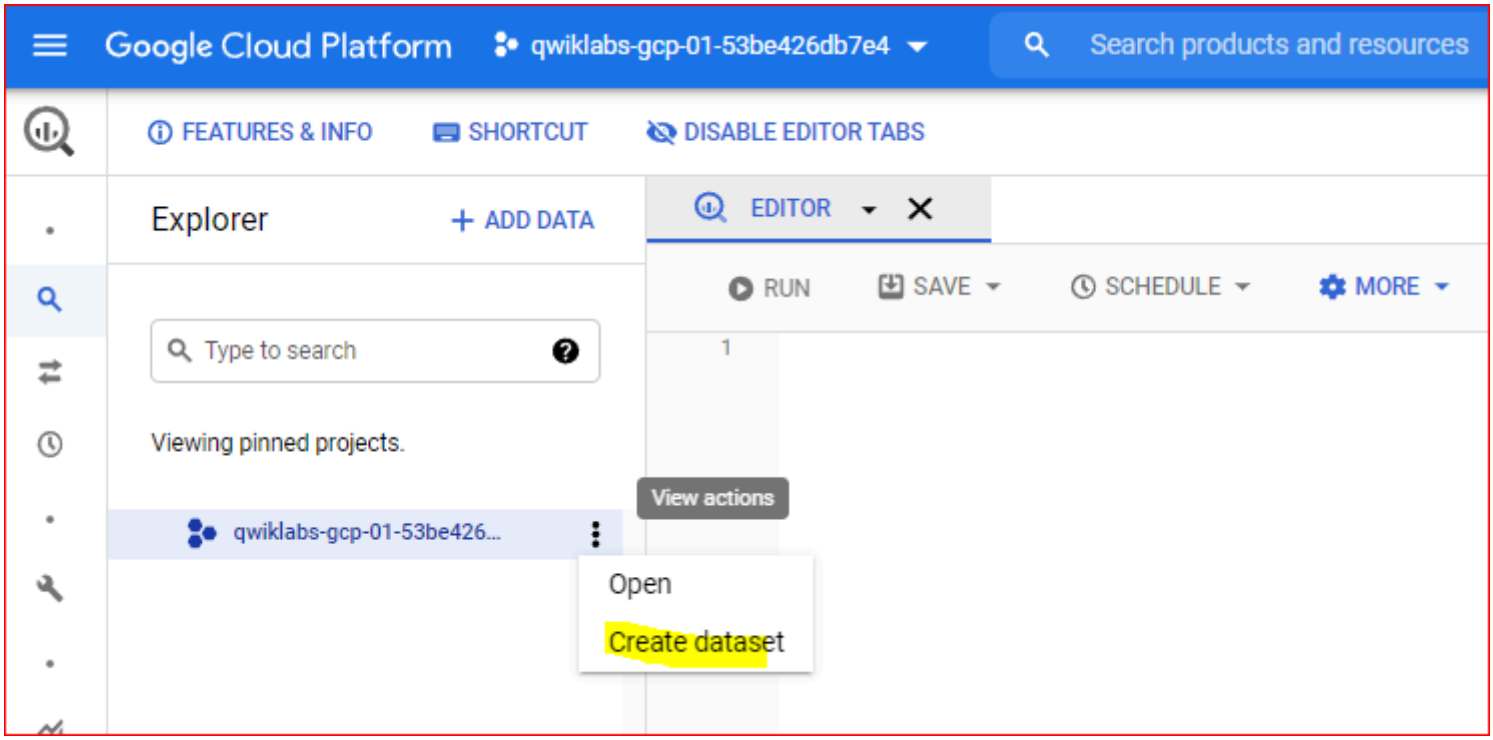
Data Lake의 데이터는 low data

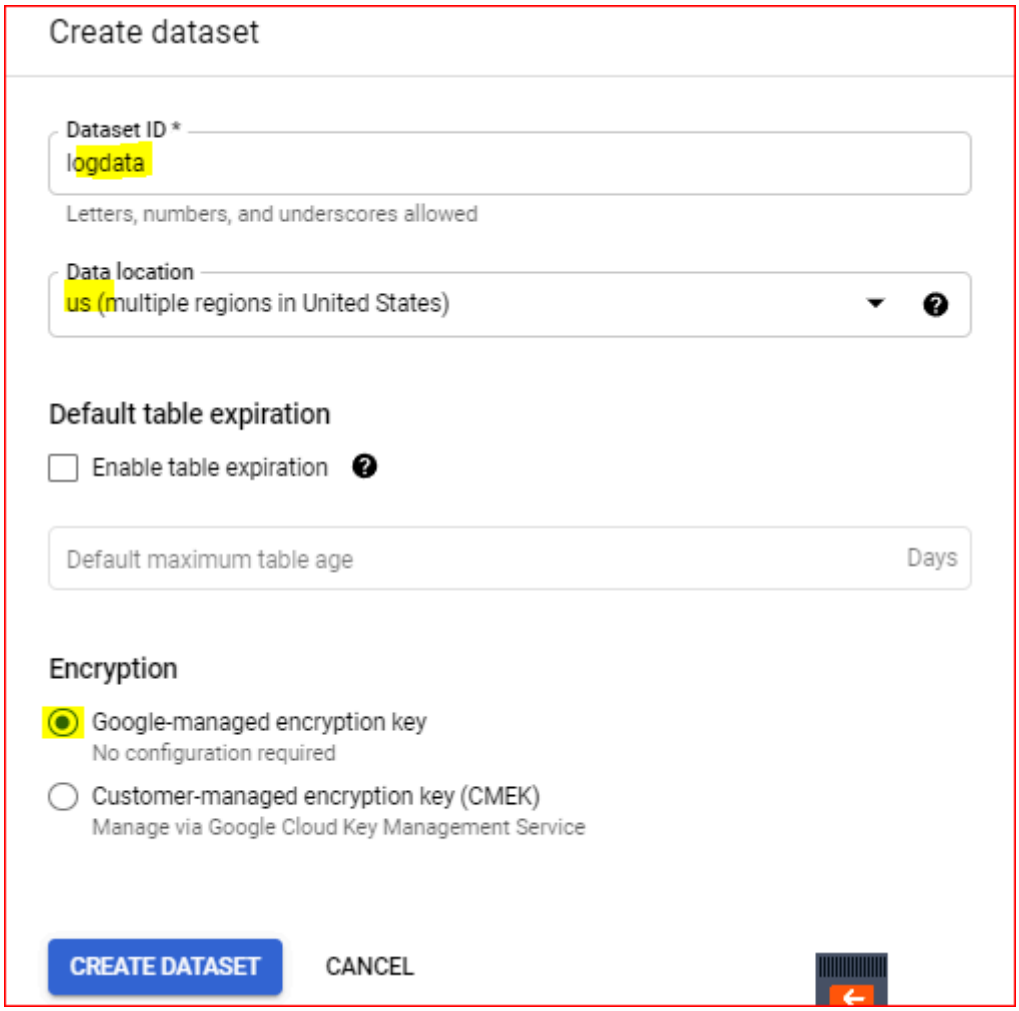
Data Lake의 데이터를 제공하는 서비스가 Google Cloud Storage

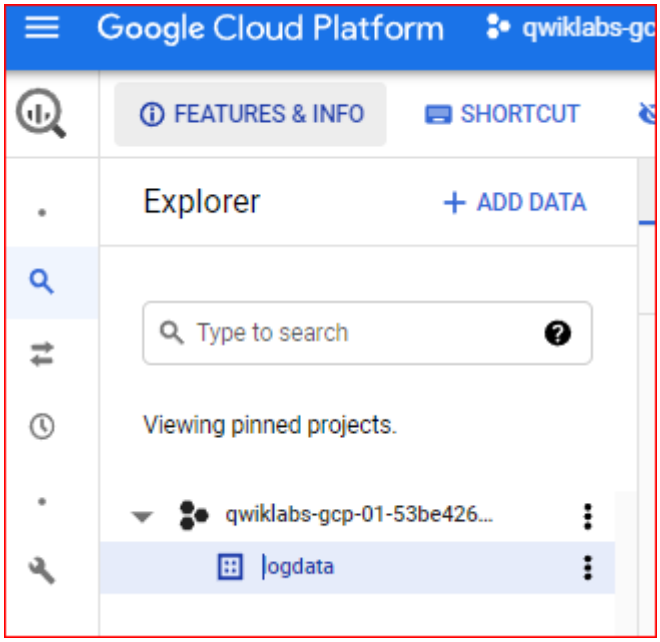
Data Warehouse에는 라벨링, 분류, 바로 사용이 가능하도록 정리가 되어있는 저장소.

bigQuery에 데이터를 저장한 후 데이터 분석을 한다.

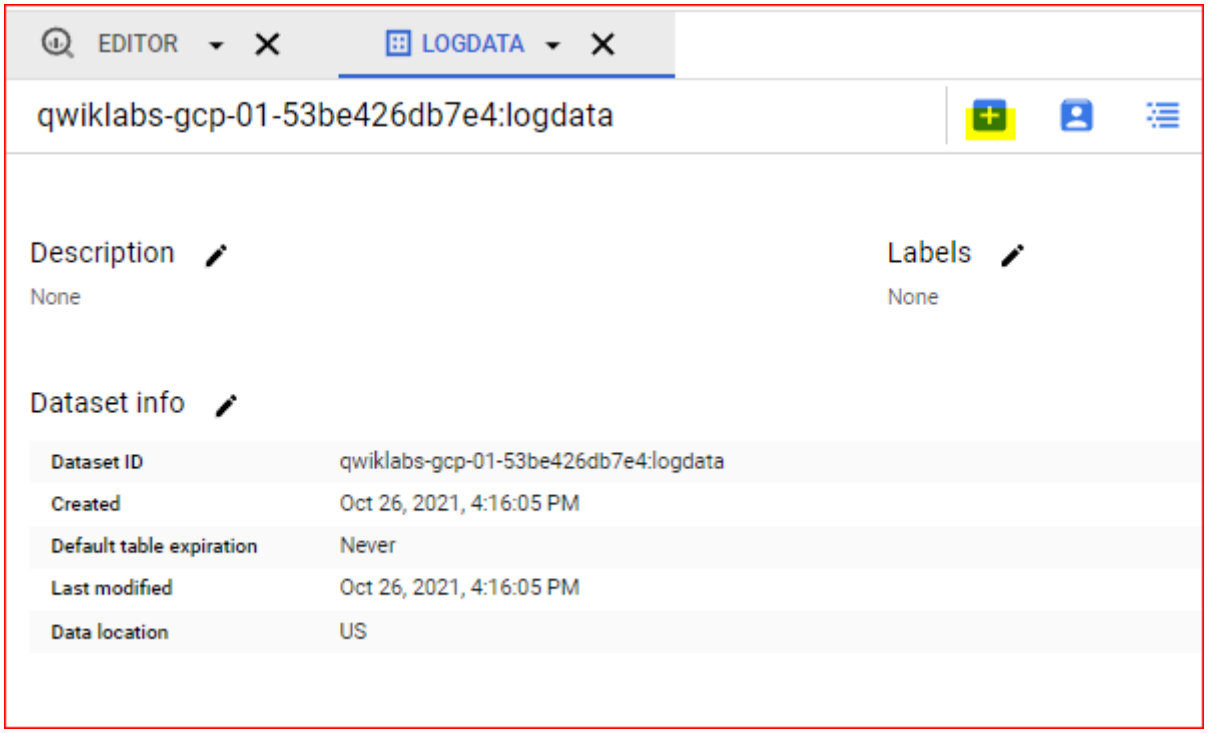

Google Cloud Platform
Home
Cloud Run for Anthos
Deployment Manager
Endpoints
Identity Platform
Private Catalog
Pin
Apigee
Carbon Footpri...
NEW
BIG DATA
Composer
Dataproc
Pub/Sub
Dataflow
Datastream
IoT Core
BigQuery
Looker


Google Cloud Platform
qwiklabs-gcp-01-53be426db7e4
Search products and resources
FEATURES & INFO
SHORTCUT
DISABLE EDITOR TABS
Explorer
+ ADD DATA
EDITOR
RUN
SAVE
SCHEDULE
MORE
Type to search
Viewing pinned projects.
qwiklabs-gcp-01-53be426...
View actions
Open
Create dataset


Create dataset
Dataset ID *
logdata
Letters, numbers, and underscores allowed
Data location
us (multiple regions in United States)
Default table expiration
Enable table expiration
Default maximum table age
Days
Encryption
Google-managed encryption key
No configuration required
Customer-managed encryption key (CMEK)
Manage via Google Cloud Key Management Service
CREATE DATASET
CANCEL



dataset안에 테이블 형테의 셋을 넣을 것이다.



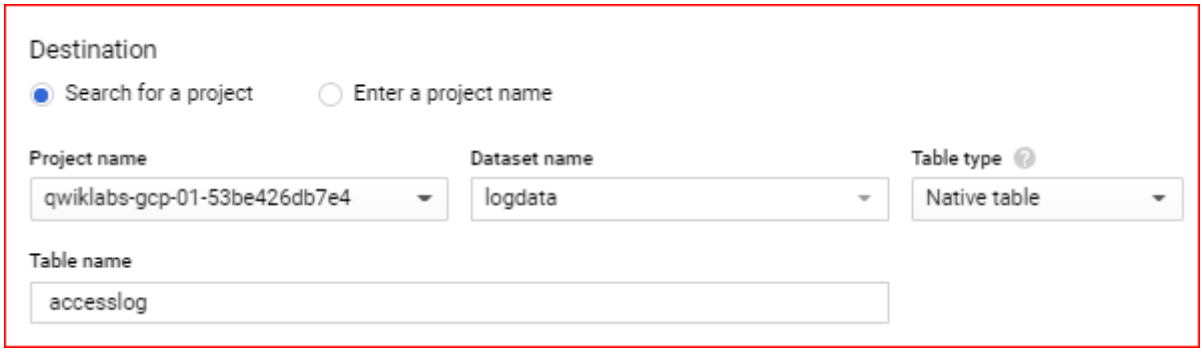
1) Source: Cloud Storage Bucket에서 데이터를 가져오기로 한다.

2) 다음 url 을 GCS bucket에서 가져오는 select file 에 넣는다.

7. Click on **CREATE TABLE**. On the **Create Table** page, in the **Source** section:

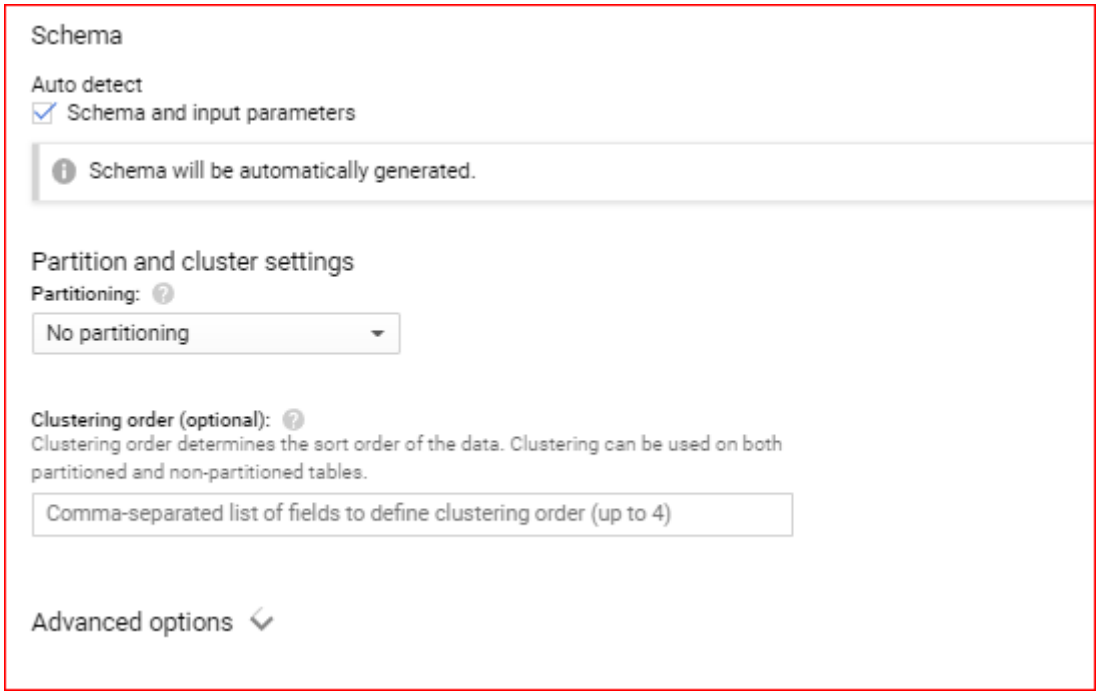
- For **Create table from**, choose select **Google Cloud Storage**, and in the field, type `gs://cloud-training/gcpfci/access_log.csv`.
- Verify **File format** is set to **CSV**.

3) Destination : 가져온 데이터를 어디에 저장할 것인가.

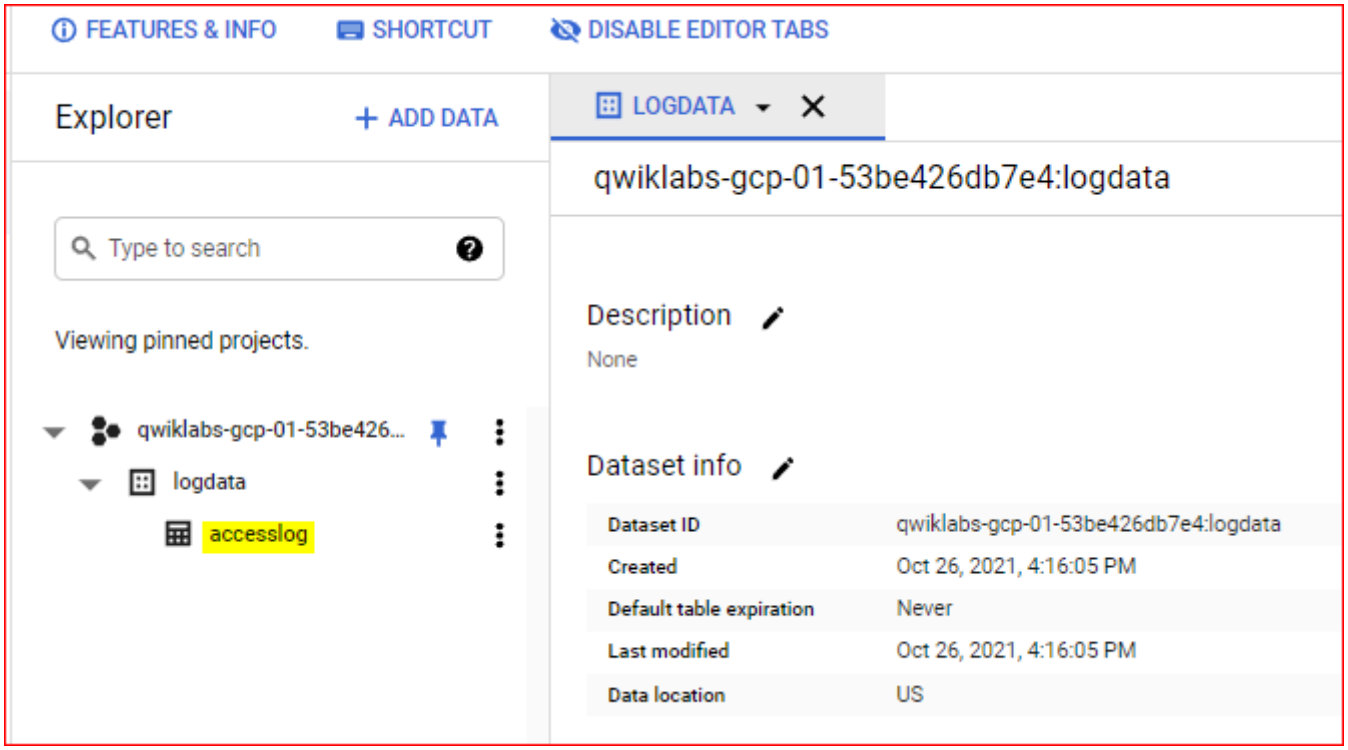


4) Schema를 자동 감지하는 기능이 있다(Auto detect)

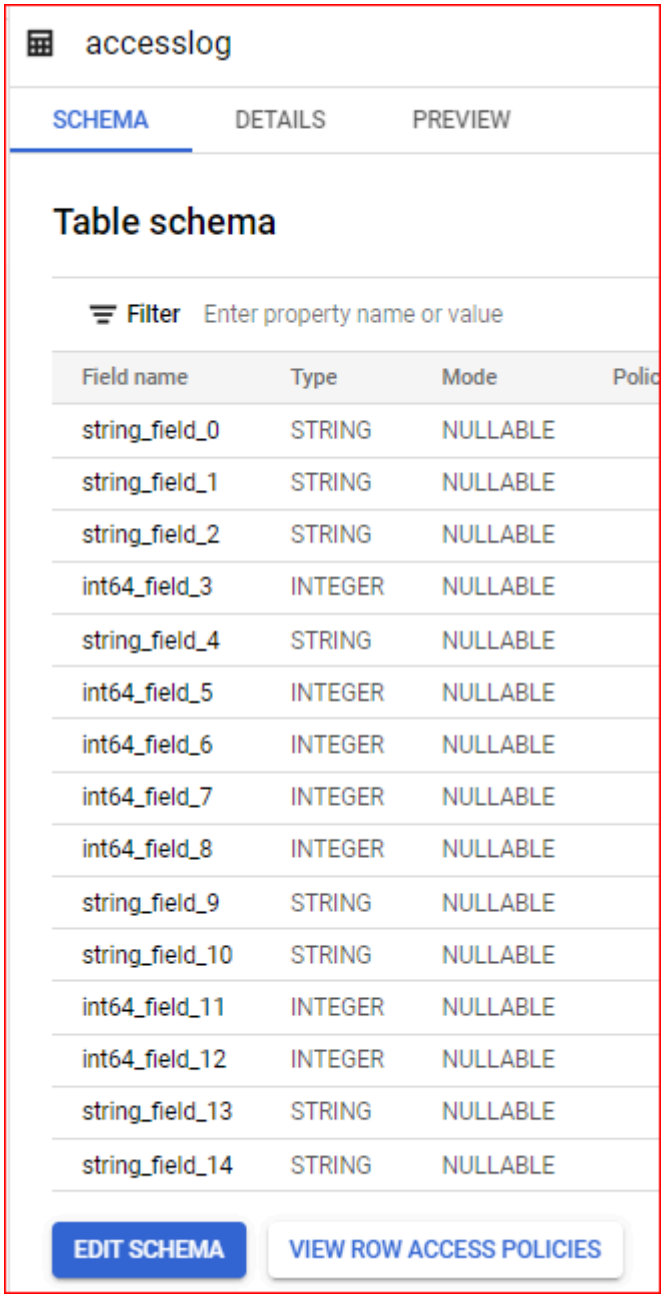
우리가 가져온 csv 파일의 규격을 자동 감지한다.



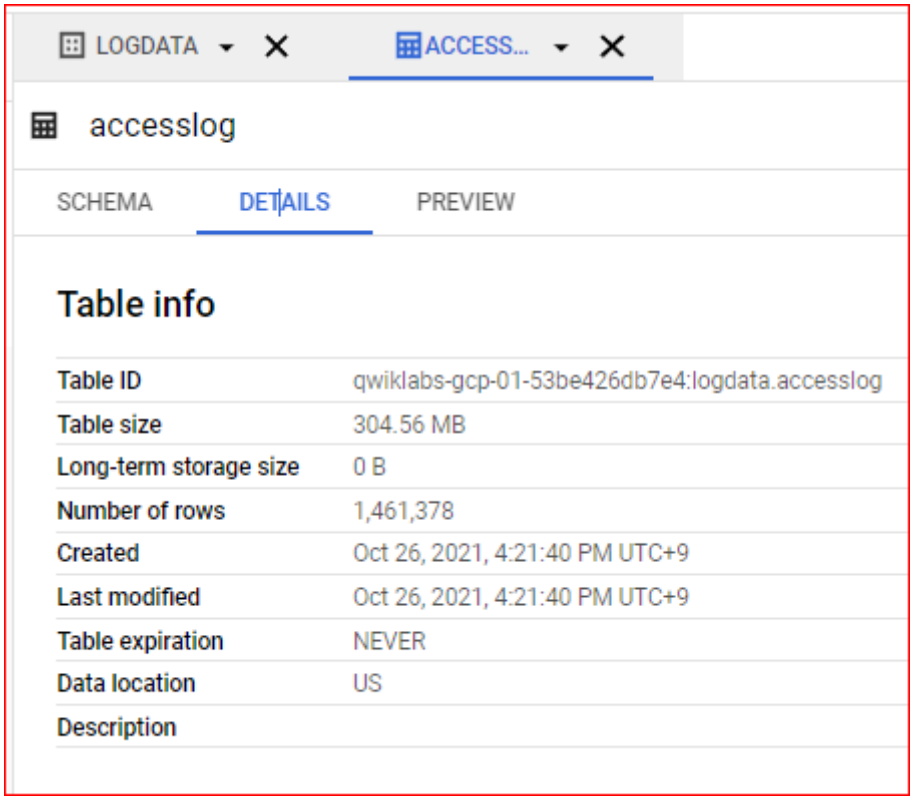
5) Partitioning은 bigQuery 성능에 관심이 있다면 설정해준다.



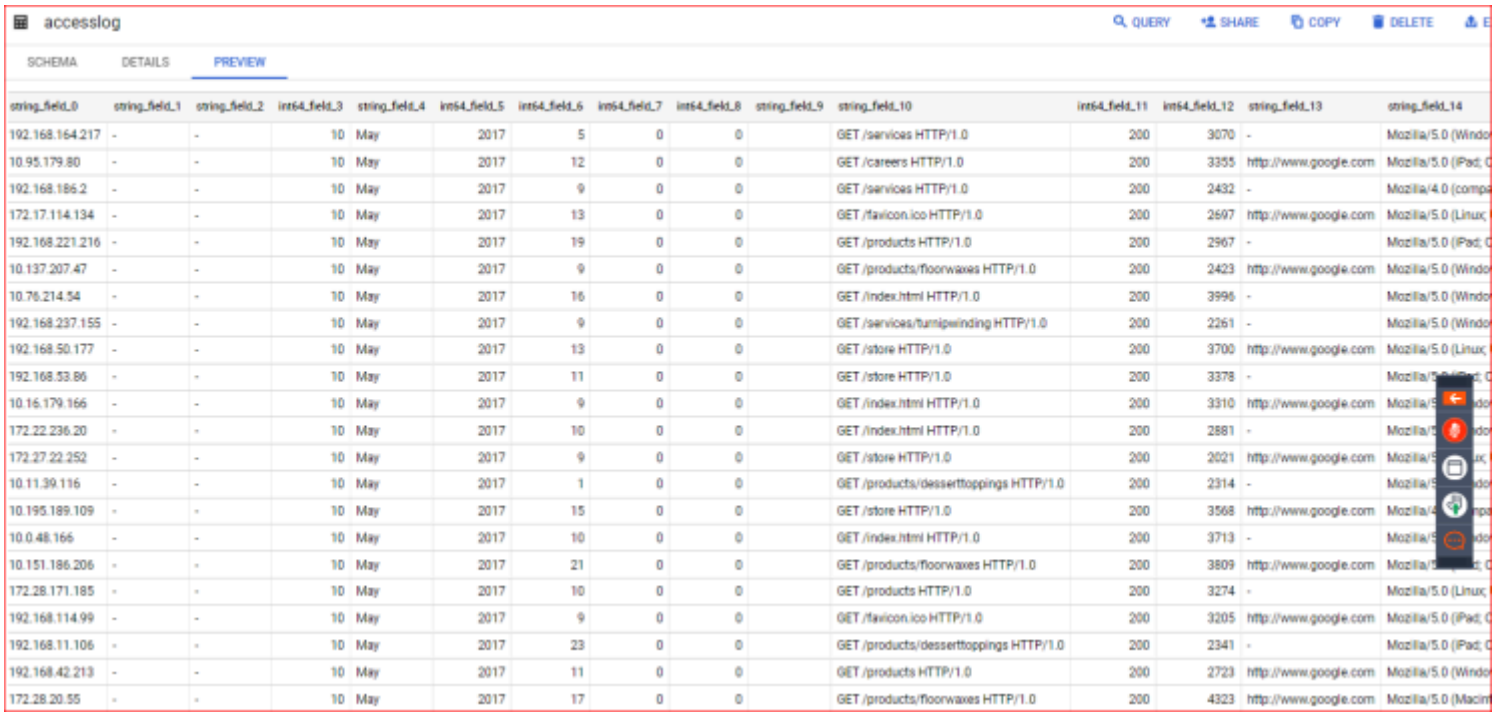
accesslog 테이블 생성완료


accesslog
SCHEMA
DETAILS
PREVIEW
Table schema
Filter
Enter property name or value
Field name
Type
Mode
Polic
string_field_0 STRING NULLABLE
string_field_1 STRING NULLABLE
string_field_2 STRING NULLABLE
int64_field_3 INTEGER NULLABLE
string_field_4 STRING NULLABLE
int64_field_5 INTEGER NULLABLE
int64_field_6 INTEGER NULLABLE
int64_field_7 INTEGER NULLABLE
int64_field_8 INTEGER NULLABLE
string_field_9 STRING NULLABLE
string_field_10 STRING NULLABLE
int64_field_11 INTEGER NULLABLE
int64_field_12 INTEGER NULLABLE
string_field_13 STRING NULLABLE
string_field_14 STRING NULLABLE
EDIT SCHEMA
VIEW ROW ACCESS POLICIES

테이블 스키마



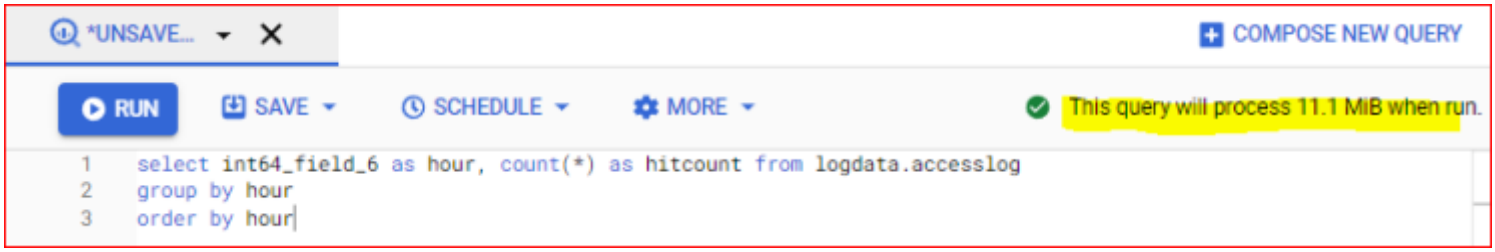
테이블 정보



string_field_0	string_field_1	string_field_2	int64_field_3	string_field_4	int64_field_5	int64_field_6	int64_field_7	int64_field_8	string_field_9	string_field_10	int64_field_11	int64_field_12	string_field_13	string_field_14
192.168.164.217	-	-	10	May	2017	5	0	0		GET /services HTTP/1.0	200	3070	-	Mozilla/5.0 (Windo
10.95.179.80	-	-	10	May	2017	12	0	0		GET /careers HTTP/1.0	200	3355	http://www.google.com	Mozilla/5.0 (iPad; C
192.168.186.2	-	-	10	May	2017	9	0	0		GET /services HTTP/1.0	200	2432	-	Mozilla/4.0 (compa
172.17.114.134	-	-	10	May	2017	13	0	0		GET /favicon.ico HTTP/1.0	200	2697	http://www.google.com	Mozilla/5.0 (Linux;
192.168.221.216	-	-	10	May	2017	19	0	0		GET /products HTTP/1.0	200	2967	-	Mozilla/5.0 (iPad; C
10.137.207.47	-	-	10	May	2017	9	0	0		GET /products/floorwaxes HTTP/1.0	200	2423	http://www.google.com	Mozilla/5.0 (Windo
10.76.214.54	-	-	10	May	2017	16	0	0		GET /index.html HTTP/1.0	200	3996	-	Mozilla/5.0 (Windo
192.168.237.155	-	-	10	May	2017	9	0	0		GET /services/turnipwinding HTTP/1.0	200	2261	-	Mozilla/5.0 (Windo
192.168.50.177	-	-	10	May	2017	13	0	0		GET /store HTTP/1.0	200	3700	http://www.google.com	Mozilla/5.0 (Linux;
192.168.53.86	-	-	10	May	2017	11	0	0		GET /store HTTP/1.0	200	3378	-	Mozilla/5.0 (iPad; C
10.16.179.166	-	-	10	May	2017	9	0	0		GET /index.html HTTP/1.0	200	3310	http://www.google.com	Mozilla/5.0 (Windo
172.22.236.20	-	-	10	May	2017	10	0	0		GET /index.html HTTP/1.0	200	2881	-	Mozilla/5.0 (Windo
172.27.22.252	-	-	10	May	2017	9	0	0		GET /store HTTP/1.0	200	2021	http://www.google.com	Mozilla/5.0 (Linux;
10.11.39.116	-	-	10	May	2017	1	0	0		GET /products/dessertToppings HTTP/1.0	200	2314	-	Mozilla/5.0 (Windo
10.195.189.109	-	-	10	May	2017	15	0	0		GET /store HTTP/1.0	200	3568	http://www.google.com	Mozilla/5.0 (compa
10.0.48.166	-	-	10	May	2017	10	0	0		GET /index.html HTTP/1.0	200	3713	-	Mozilla/5.0 (Windo
10.151.186.206	-	-	10	May	2017	21	0	0		GET /products/floorwaxes HTTP/1.0	200	3809	http://www.google.com	Mozilla/5.0 (iPad; C
172.28.171.185	-	-	10	May	2017	10	0	0		GET /products HTTP/1.0	200	3274	-	Mozilla/5.0 (Linux;
192.168.114.99	-	-	10	May	2017	9	0	0		GET /favicon.ico HTTP/1.0	200	3205	http://www.google.com	Mozilla/5.0 (iPad; C
192.168.11.106	-	-	10	May	2017	23	0	0		GET /products/dessertToppings HTTP/1.0	200	2341	-	Mozilla/5.0 (iPad; C
192.168.42.213	-	-	10	May	2017	11	0	0		GET /products HTTP/1.0	200	2723	http://www.google.com	Mozilla/5.0 (Windo
172.28.20.55	-	-	10	May	2017	17	0	0		GET /products/floorwaxes HTTP/1.0	200	4323	http://www.google.com	Mozilla/5.0 (Macint

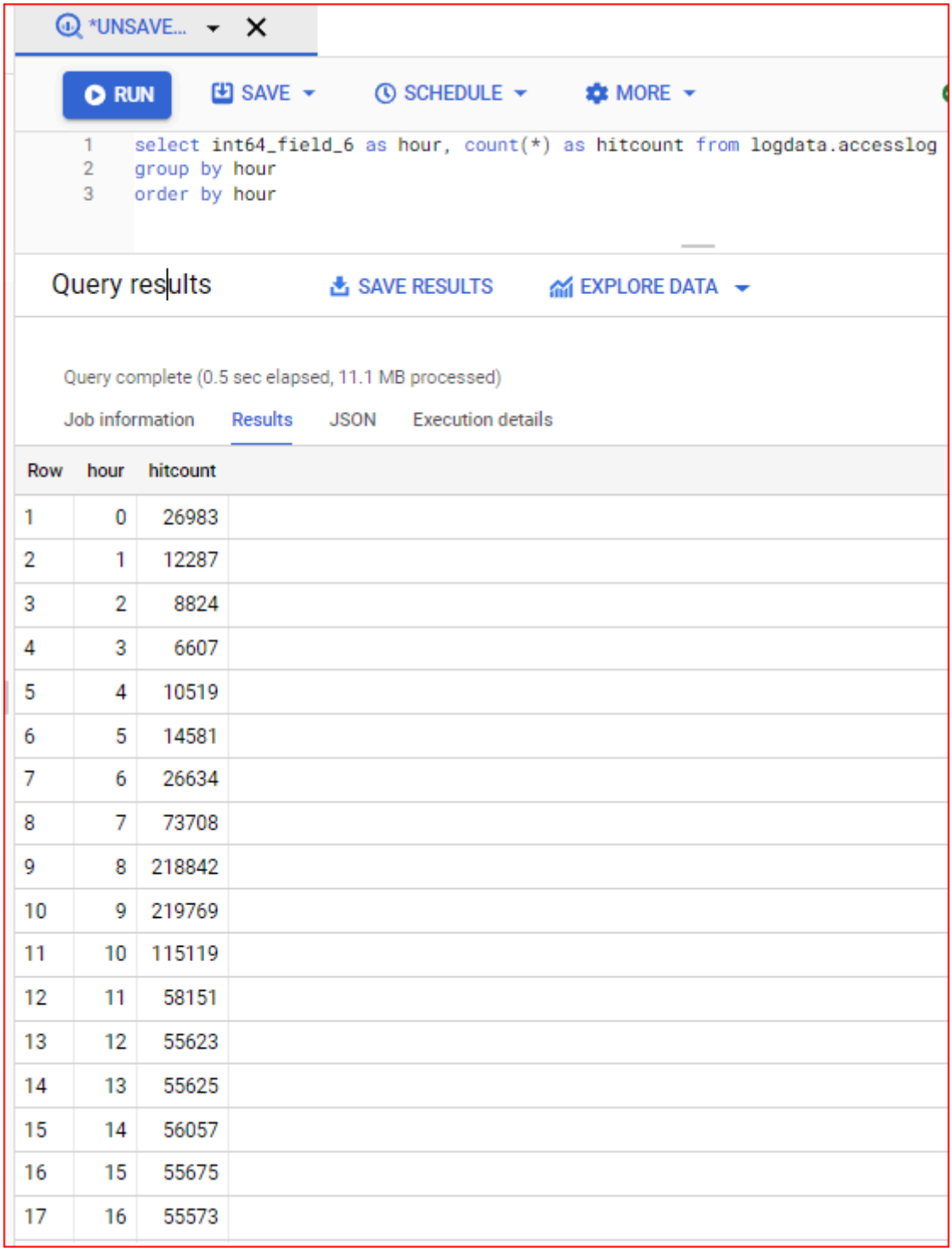
Task 3: Perform a query on the data using the BigQuery web UI

EDITOR 부분에 쿼리문을 작성한다.



초록색 체크: 쿼리문 실행이 가능함을 의미 및 쿼리가 처리할 데이터 양을 미리 보여준다

bigQuery는 처리할 데이터 양에 따라 비용을 부여하기 때문에 주의할 것.



Row	hour	hitcount
1	0	26983
2	1	12287
3	2	8824
4	3	6607
5	4	10519
6	5	14581
7	6	26634
8	7	73708
9	8	218842
10	9	219769
11	10	115119
12	11	58151
13	12	55623
14	13	55625
15	14	56057
16	15	55675
17	16	55573

```
1  select int64_field_6 as hour, count(*) as hitcount from logdata.accesslog
2  group by hour
3  order by hour
```

Query results SAVE RESULTS EXPLORE DATA

Query complete (0.5 sec elapsed, 11.1 MB processed)

Job information | Results | JSON | Execution details

For help debugging or optimizing your query, check our documentation. Learn more

Elapsed time	Slot time consumed	Bytes shuffled	Bytes spilled to disk
0.5 sec	0.515 sec	864 B	0 B

Worker timing

Stages		Wait	Read	Compute	Write		Rows
S00: Input	Avg:	0 ms	47 ms	296 ms	6 ms	Input:	1,461,378
	Max:	0 ms	47 ms	296 ms	6 ms	Output:	24
S01: Aggregate	Avg:	1 ms	0 ms	4 ms	4 ms	Input:	24
	Max:	1 ms	0 ms	4 ms	4 ms	Output:	24
S02: Output	Avg:	1 ms	0 ms	6 ms	53 ms	Input:	24
	Max:	1 ms	0 ms	6 ms	53 ms	Output:	24

3단계 stage로 나눠 쿼리를 실행했음

파란색 그래프가 많을 수록 해당 작업에 부하가 집중되는 것을 의미함.

Active Cloud Shell에서 bigQuery를 날려본다.

```
student_02_9f40435be7f2@cloudshell:~ (qwiklabs-gcp-01-53be426db7e4)$ bq query "select string_field_10 as request, count(*) as requestcount from logdata.ac
cesslog group by request order by requestcount desc"
Waiting on bqjob_r613d9625f06024c2_0000017cbb8256dc_1 ... (0s) Current status: DONE
+---------------------------------------+--------------+
|                request                | requestcount |
+---------------------------------------+--------------+
| GET /store HTTP/1.0                   |       337293 |
| GET /index.html HTTP/1.0              |       336193 |
| GET /products HTTP/1.0                |       280937 |
| GET /services HTTP/1.0                |       169090 |
| GET /products/desserttoppings HTTP/1.0 |        56580 |
| GET /products/floorwaxes HTTP/1.0     |        56451 |
| GET /careers HTTP/1.0                 |        56412 |
| GET /services/turnipwinding HTTP/1.0  |        56401 |
| GET /services/spacetravel HTTP/1.0    |        56176 |
| GET /favicon.ico HTTP/1.0             |        55845 |
+---------------------------------------+--------------+
student_02_9f40435be7f2@cloudshell:~ (qwiklabs-gcp-01-53be426db7e4)$
```