Exam : Professional-Cloud-Architect

Title : Google Certified Professional - Cloud Architect (GCP)

Vendor : Google

Version : V16.3

NO.1 Your company has decided to make a major revision of their API in order to create better experiences for their developers. They need to keep the old version of the API available and deployable, while allowing new customers and testers to try out the new API. They want to keep the same SSL and DNS records in place to serve both APIs. What should they do?

D. Use separate backend pools for each API path behind the load balancer.

요구사항 : 기존 API와 새로운 API를 동일한 SSL 및 DNS를 유지하여 제공하기위해서는?
해결방법 : 각 API경로에 별도의 백엔드 풀을 사용

NO.2 During a high traffic portion of the day, one of your relational databases crashes, but the replica is never promoted to a master. You want to avoid this in the future. What should you do?

D. Implement routinely scheduled failovers of your databases.

요구사항 : 트래픽 많을때 관계형 디비가 충돌했고 복제본은 미스터로 승격되지않는다. 이를 피하기위해서는?
해결방법 : 주기적으로 장애조치를 구현해라

NO.3 Your office is connected to GCP via a VPN connection. How can you increase the speed of your VPN connection, assuming that your office Internet is not the bottleneck?

C. Create an additional VPN tunnel

요구사항 : VPN으로 GCP와 연결한다. VPN 연결속도를 높이려면?
해결방법 : 추가 VPN 터널 생성

NO.4 A lead engineer wrote a custom tool that deploys virtual machines in the legacy data center. He wants to migrate the custom tool to the new cloud environment. You want to advocate for the adoption of Google Cloud Deployment Manager. What are two business risks of migrating to Cloud Deployment Manager? Choose 2 answers

E. Cloud Deployment Manager can be used to permanently delete cloud resources.

F. Cloud Deployment Manager only supports automation of Google Cloud resources.

요구사항 : Cloud Deployment Manager로 마이그레이션할때 발생하는 비즈니스 위험요소?
해결방법 : 관리자를 사용하여 리소스를 영구적으로 삭제가능, 리소스의 자동화만 지원

NO.5 An application development team believes their current logging tool will not meet their needs for their new cloud-based product. They want a better tool to capture errors and help them

analyze their historical log data. You want to help them find a solution that meets their needs, what should you do?

C. Help them define their requirements and assess viable logging tools.

요구사항 : 오류를 찾고 과거 로그 데이터를 분석할수있는 더 나은 도구?
해결방법 : 요구사항을 정의하고 실행 가능한 로깅 도구를 평가하도록 지원

NO.6 Your customer is receiving reports that their recently updated Google App Engine application is taking approximately 30 seconds to load for some of their users. This behavior was not reported before the update. What strategy should you take?

C. Roll back to an earlier known good release initially, then use Stackdriver Trace and logging to diagnose the problem in a development/test/staging environment.

요구사항 : 동작이 업데이트 전에 보고되지 않았다. 어떤전략이 필요한가?
해결방법 : 양호한 릴리즈로 롤백하고 스택드라이버 트레이스와 로깅을 사용한다.

NO.7 The application reliability team at your company has added a debug feature to their backend service to send all server events to Google Cloud Storage for eventual analysis. The event records are at least 50 KB and at most 15 MB and are expected to peak at 3,000 events per second. You want to minimize data loss. Which process should you implement?

D. Append metadata to file body.
Compress individual files.
Name files with a random prefix pattern.
Save files to one bucket

요구사항 : 최소 50KB, 최대 15MB이며 초당 3,000개의 이벤트에서 데이터 손실을 최소화?
해결방법 : 메타데이터 추가, 개별 압축, 입의 접두사 적용, 하나의 버킷에 저장

NO.8 You are designing a large distributed application with 30 microservices. Each of your distributed microservices needs to connect to a database back-end. You want to store the credentials securely. Where should you store the credentials?

C. In a secret management system

요구사항 : 자격증명을 안전하게 저장하려면?
해결방법 : 비밀관리시스템에 저장

NO.9 Your company wants to try out the cloud with low risk. They want to archive approximately 100 TB of their log data to the cloud and test the analytics features available to them there, while also

retaining that data as a long-term disaster recovery backup. Which two steps should they take? Choose 2 answers

A. Load logs into Google BigQuery.
E. Upload log files into Google Cloud Storage.

요구사항 : 장기 재해 복구 백업으로 유지하려면?
해결방법 : Google BigQuery, Google Cloud Storage 사용

NO.10 You are creating a solution to remove backup files older than 90 days from your backup Cloud Storage bucket. You want to optimize ongoing Cloud Storage spend. What should you do?

B. Write a lifecycle management rule in JSON and push it to the bucket with gsutil.

요구사항 : 90일 지난 백업 파일 제거 솔루션에서 클라우드 스토리지 지출 최적화?
해결방법 : JSON에 라이프사이클 규칙관리 작성, gsutil 버킷 푸시

NO.11 Your company runs several databases on a single MySQL instance. They need to take backups of a specific database at regular intervals. The backup activity needs to complete as quickly as possible and cannot be allowed to impact disk performance. How should you configure the storage?

C. Use gcsfuse to mount a Google Cloud Storage bucket as a volume directly on the instance and write backups to the mounted location using mysqldump

Answer: C

요구 사항 : 정기적으로 특정 데이터베이스를 백업해야 되는 상황에서 디스크 성능에 영향을 미치지 않고 가능한 한 빨리 완료하기 위해 어떻게 스토리지를 구성할 것인가?

해결 방법 : gcsfuse를 사용하여 Google Cloud 스토리지 버킷을 인스턴스에 직접 볼륨으로 마운트하고 mysqldump를 사용하여 마운트된 위치에 백업 기록한다.

NO.12 A development manager is building a new application. He asks you to review his requirements and identify what cloud technologies he can use to meet them.
The application must:
1. Be based on open-source technology for cloud portability
2. Dynamically scale compute capacity based on demand
3. Support continuous software delivery
4. Run multiple segregated copies of the same application stack
5. Deploy application bundles using dynamic templates
6. Route network traffic to specific services based on URL
Which combination of technologies will meet all of his requirements?

D. Google Compute Engine, Jenkins, and Cloud Load Balancing
Answer: D

요구사항 : 문제의 요구사항을 충족시키기 위해 어떤 기술의 조합을 사용해야 하는가?

해결 방법 : Google 컴퓨팅 엔진, Jenkins 및 클라우드 로드 밸런싱

설명 : Jenkins는 빌드, 테스트 및 배포 파이프라인을 유연하게 조정할 수 있는 오픈 소스 자동화 서버 입니다.

NO.13 Your company is forecasting a sharp increase in the number and size of Apache Spark and Hadoop jobs being run on your local datacenter You want to utilize the cloud to help you scale this upcoming demand with the least amount of operations work and code change. Which product should you use?

B. Google Cloud Dataproc

Answer: B

요구사항 : 데이터 작업의 수와 규모가 급격히 증가할 것으로 예상되어 최소한의 운영 작업과 코드 변경으로 수요를 확장하는 것에 도움이 될 제품은 무엇인가?

해결 방법 : Google Cloud Dataproc

Google Cloud Dataproc는 크고 작은 클러스터를 신속하게 프로비저닝하고, 많은 인기 있는 작업 유형을 지원하며, 구글 클라우드 스토리지 및 스택드라이버 로깅과 같은 다른 구글 클라우드 플랫폼 서비스와 통합되어 TCO를 절감하는 데 도움이 된다.

NO.14 Your organization has a 3-tier web application deployed in the same network on Google Cloud Platform. Each tier (web, API, and database) scales **independently of the others.** Network traffic should **flow through the web to the API tier and then on to the database tier.** Traffic should not flow between the web and the database tier. How should you configure the network?

D. Add **tags** to each tier and set up **firewall rules** to allow the desired traffic flow.

Answer: D

요구사항 : 3계층 웹 애플리케이션을 구축할 때 각 계층은 다른 계층과 독립적으로 확장되어야 한다. 네트워크 트래픽은 웹을 통해 API 계층으로, 그 다음 데이터베이스 계층으로 흘러야 한다. 트래픽은 웹과 데이터베이스 계층 사이에 흐르지 않아야 한다. 이런 요구사항을 만족시키는 네트워크 구성 방법은 무엇인가?

해결 방법 : 각 계층에 태그를 추가하고 원하는 트래픽 흐름을 허용하도록 방화벽 규칙을 설정한다.

설명 : 구글 클라우드 플랫폼(GCP)은 규칙과 태그를 통해 방화벽 규칙을 시행한다. GCP 규칙과 태그는 한 번 정의되어 모든 지역에서 사용될 수 있다.

NO.15 One of your primary business objectives is being able to trust the data stored in your application. You want to log all changes to the application data. How can you design your logging system to verify authenticity of your logs?

D. Create a JSON dump of each log entry and store it in Google Cloud Storage.

Answer: D

요구사항 : 응용 프로그램 데이터에 대한 모든 변경 사항을 기록하려는 경우. 로그의 신뢰성을 확인하기 위해 로그 시스템을 어떻게 설계할 수 있는가?

해결방법 : 각 로그 항목에 대한 JSON 덤프를 만들어 Google 클라우드 저장소에 저장한다.

NO.16 Your company wants to track whether someone is present in a meeting room reserved for a scheduled meeting. There are 1000 meeting rooms across 5 offices on 3 continents. Each room is equipped with a motion sensor that reports its status every second. The data from the motion detector includes only a sensor ID and several different discrete items of information. Analysts will use this data, together with information about account owners and office locations. Which database type should you use?

B. NoSQL
Answer: B

요구사항 : 예약된 미팅룸에 누군가가 참석했는지 여부를 추적하고자 한다. 1000개의 회의실이 있고 각 방에는 동작 감지기의 데이터는 센서 ID와 몇 가지 다른 이산 정보 항목만 포함한다. 분석가들은 계정 소유주 및 사무실 위치에 대한 정보와 함께 이 데이터를 사용할 것이다. 어떤 데이터베이스 유형을 사용할 것인가?

해결방법 : NoSQL

설명 : NoSQL은 대량의 새로운 볼륨을 생성하는 애플리케이션과 협력하기 용이하고 데이터 유형으로는 정형, 반정형, 비정형 및 다형성 데이터를 모두 사용할 수 있다.

NO.17 A news teed web service has the following code running on Google App Engine. During peak load, users report that they can see news articles they already viewed.
What is the most likely cause of this problem?

```
import news
from flask import Flask, redirect, request
from flask.ext.api import status
from google.appengine.api import users

app = Flask(_name_)
sessions = {}

@app.route("/")
def homepage():
     user = users.get_current_user()
     if not user:
          return "Invalid login",
status.HTTP_401_UNAUTHORIZED

     if user not in sessions:
          sessions[user] = {"viewed": []}

     news_articles = news.get_new_news (user, sessions [user]
["viewed"])
     sessions [user] ["viewed"] +- [n["id"] for n
in news_articles]

     return news.render(news_articles)

if _name_ == "_main_":
     app.run()
```

B. The session variable is being overwritten in Cloud Datastore.

Answer: B

요구사항 : 뉴스 웹 서비스는 구글 앱 엔진에서 실행 중인 다음과 같은 코드를 가지고 있다. 피크 로딩 동안 사용자들은 이미 본 뉴스 기사를 볼 수 있다고 보고한다.
이 문제의 가장 유력한 원인은 무엇인가?

해결방법 : 세션 변수가 클라우드 데이터스토어에 덮어쓰는 중기 때문이다.

NO.18 You are helping the QA team to roll out a new load-testing tool to test the scalability of your primary cloud services that run on Google Compute Engine with Cloud Bigtable. Which three requirements should they include? Choose 3 answers

A. Ensure that the load tests validate the performance of Cloud Bigtable.

B. Create a separate Google Cloud project to use for the load-testing environment.
F. Instrument the load-testing tool and the target services with detailed logging and metrics collection.
Answer: ABF

요구사항 : Google Compute Engine with Cloud Bigtable에서 실행되는 기본 클라우드 서비스의 확장성을 테스트하기 위한 새로운 로드 테스트 도구를 출시할 수 있도록 지원하고 있다. 어떤 세 가지 요구사항을 포함해야 하는가?

해결방법 : 부하 테스트를 통해 Cloud Bigtable의 성능을 검증
부하 테스트 환경에 사용할 별도의 Google 클라우드 프로젝트 생성
상세한 로깅 및 메트릭스 수집을 통해 로드 테스트 도구와 대상 서비스를 계측

설명 : A_성능이 좋지 않은 BigTable을 사용하면 로드가 증가함에 따라 클러스터는 계속해서 확장하고 노드를 추가할 수 있으며 비용이 점점 더 많이 소요
B_최소한의 특권과 책임 분리를 위해서
F_세부적이고 측정 가능한 메트릭과 기록 로그를 사용하여 테스트 결과를 수집하기 위해서

NO.19 To reduce costs, the Director of Engineering has required all developers to move their development infrastructure resources from on-premises virtual machines (VMs) to Google Cloud Platform. These resources go through multiple start/stop events during the day and require state to persist. You have been asked to design the process of running a development environment in Google Cloud while providing cost visibility to the finance department.
Which two steps should you take? Choose 2 answers

A. Use the -no-auto-delete flag on all persistent disks and stop the VM.
D. Use Google BigQuery billing export and labels to associate cost to groups.
Answer: AD

요구사항 : 개발 인프라 리소스를 사내 가상 머신(VM)에서 Google 클라우드 플랫폼으로 이동하도록 요구하였다. 재무 부서에 비용 가시성을 제공하는 동시에 구글 클라우드에서 개발 환경을 운영하는 프로세스를 설계하라는 요청이 있을 때 어떤 두 단계를 거쳐야 하는가?

해결방벙 : A. 모든 영구 디스크에서 -no-auto-delete flag를 사용하고 VM을 중지
D. Google BigQuery 청구서 내보내기 및 레이블을 사용하여 비용을 재무부서에 연결한다.

NO.20 Your application needs to process credit card transactions. You want the smallest scope of Payment Card Industry (PCI) compliance without compromising the ability to analyze transactional data and trends relating to which payment methods are used. How should you design your architecture?

A. Create a tokenizer service and store only tokenized data.
Answer: A

요구사항 : 거래 데이터와 추세를 분석할 수 있는 능력을 훼손하지 않고 PCI(Payment Card Industry) 컴플라이언스의 최소 범위를 원하는 경우에 어떻게 아키텍처를 설계해야 하는가?

해결방법 : A. 토큰나이저 서비스를 생성하고 토큰화된 데이터만 저장하십시오

NO.21 You write a Python script to connect to Google BigQuery from a Google Compute Engine virtual machine. The script is printing errors that it cannot connect to BigQuery. What should you do to fix the script?
요구사항 : 파이썬으로 작성한 스크립트가 Google BigQuery에 연결할 수 없다는 에러를 낼 때 이를 고치는 방법?

해결방법 : **A.** Install the latest BigQuery API client library for Python
(파이썬을 지원하는 최신 빅쿼리 API 라이브러리를 설치한다.)

NO.22 You deploy your custom Java application to Google App Engine.
It fails to deploy and gives you the following stack trace.

```
java.lang.SecurityException: SHA1 digest error for
com/Altostrat/CloakedServlet.class
     at com.google.appengine.runtime.Request.process
-d36f818a24b8cf1d (Request.java)
     at
sun.security.util.ManifestEntryVerifier.verify
(ManifestEntryVerifier.java:210)
     at java.util.jar.JarVerifier.processEntry
(JarVerifier.java:218)
     at java.util.jar.JarVerifier.update
(JarVerifier.java:205)
     at
java.util.jar.JarVerifiersVerifierStream.read
(JarVerifier.java:428)
     at sun.misc.Resource.getBytes
(Resource.java:124)
     at java.net.URL.ClassLoader.defineClass
(URLClassLoader.java:273)
     at sun.reflect.GeneratedMethodAccessor5.invoke
(Unknown Source)
     at
sun.reflect.DelegatingMethodAccessorImpl.invoke
(DelegatingMethodAccessorImpl.java:43)
     at java.lang.reflect.Method.invoke
(Method.java:616)
     at java.lang.ClassLoader.loadClass
(ClassLoader.java:266)
```

What should you do?

요구사항 : 자바 어플리케이션을 배포 했으나 위와 같은 오류를 낼 때의 해결방법

해결방법 : **B.** Digitally sign all of your JAR files and redeploy your application.

(SHA1 digest Error 는 유효하지 않은 서명이 있을 때 발생하는 에러이다.)

NO.23 Your company just finished a rapid lift and shift to Google Compute Engine for your compute needs. You have another 9 months to design and deploy a more cloud-native solution. Specifically, you want a system that is no-ops and auto-scaling. Which two compute products should you choose? Choose 2 answers.

요구사항 : GCP에서 no-ops, auto-scaling 기능을 제공는 compute products를 골라라.

해결방법 :

B. Google Container Engine with containers
(구글의 컨테이너 환경은 자동으로 클러스터를 배포하고 업데이트 한다. 또한, 쿠버네티스 엔진은 클러스터 오토엔진을 지니고 있어 자동으로 클러스터의 크기를 조정한다.)

C. Google App Engine Standard Environment
(구글의 App Engine은 No-Ops 환경으로 이루어져 있으며 로드에 맞게 자동으로 인스턴스의 수를 늘려준다.)

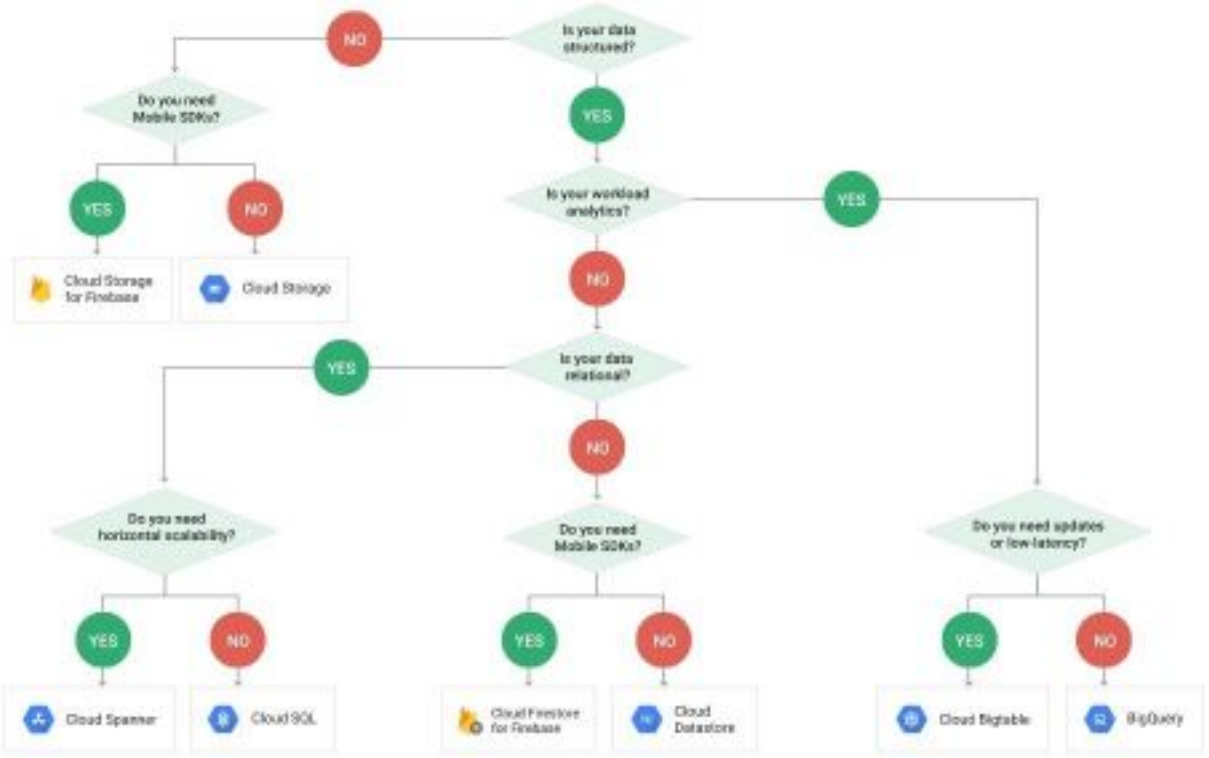
NO.24 Your marketing department wants to send out a promotional email campaign. The development team wants to minimize direct operation management. They project a wide range of possible customer responses, from 100 to 500,000 click-through per day. The link leads to a simple website that explains the promotion and collects user information and preferences. Which infrastructure should you recommend? Choose 2 answers.

요구사항 : GCP에서 광범위하고 가변적인 접근이 요구되는 환경에서 복잡하지 않은 기능을 구현할 때 추천할수 있는 인프라구조는?

해결방법 :

A. Use Google App Engine to serve the website and Google Cloud Datastore to store user data.

C. Use a managed instance group to serve the website and Google Cloud Bigtable to store user
(Google App Engine 혹은 Google Cloud Bigtable을 사용한다.)



NO.25 Your development team has installed a new Linux kernel module on the batch servers in Google Compute Engine (GCE) virtual machines (VMs) to speed up the nightly batch process. Two days after the installation, 50% of the batch servers failed the nightly batch run. You want to collect details on the failure to pass back to the development team. Which three actions should you take? Choose 3 answers .

요구사항 : 야간 서버가 실행되지 않을 때, 로그를 확인할 수 있는 방법들

해결방안 :

A. Use Stackdriver Logging to search for the module log entries.
(스택드라이버 로깅 기능을 모듈로그를 검색하기 위해 사용한다.)

C. Use gcloud or Cloud Console to connect to the serial console and observe the logs.
(Cloud Console 환경에서 직접 로그를 관찰한다.)

E. Adjust the Google Stackdriver timeline to match the failure time, and observe the batch server metrics.
(구글 스택드라이버 타임라인을 고장 시간과 일치하도록 조정하고, 배치 서버 메트릭스를 관찰한다.)

Answer: ACE

NO.26 You want to optimize the performance of an accurate, real-time, weather-charting application.
The data comes from 50,000 sensors sending 10 readings a second, in the format of a timestamp and sensor reading. Where should you store the data?

요구사항 : 초당 500,000개의 데이터를 저장할 수 있는 빅데이터 공간은?

해결방안 : **C.** Google Cloud Bigtable
(구글 클라우드 빅테이블은 실시간 액세스와 분석 워크로드 모두에 적합한 확장 가능한 완전 관리형 NoSQL 와이드 컬럼 데이터베이스다.)

NO.27 You want to enable your running Google Container Engine cluster to scale as demand for your application changes. What should you do?

요구사항 : Google Container Engine의 클러스터를 확장하는 방법은?

A. Add additional nodes to your Container Engine cluster using the following command:
```
gcloud container clusters resize CLUSTER_NAME --size 10
```

B. Add a tag to the instances in the cluster with the following command:
```
gcloud compute instances add-tags INSTANCE --tags enable
-autoscaling max-nodes-10
```

C. Update the existing Container Engine cluster with the following command:
```
gcloud alpha container clusters update mycluster --
enable-autoscaling --min-nodes=1 --max-nodes=10
```

D. Create a new Container Engine cluster with the following command:
```
gcloud alpha container clusters create mycluster --
enable-autoscaling --min-nodes=1 --max-nodes=10
```
and redeploy your application

해결방법 : **C.** Update the existing Container Engine cluster with the following command
`gcloud alpha container clusters update mycluster --enable-autoscaling --min-nodes=1 --max-nodes=10`
(오토스케일링 기능을 부여하면 자동적으로 확장이 가능하며 메모리 소모도 적다.)

NO.28 You need to reduce the number of unplanned rollbacks of erroneous production deployments in your company's web hosting platform. Improvement to the QA/Test processes accomplished an 80% reduction. Which additional two approaches can you take to further reduce the rollbacks? Choose 2 answers

요구사항 : QA/Test processes 개선을 제외한 계획되지 않은 롤백을 줄일 수 있는 방법은?

해결방안 :

A. Introduce a green-blue deployment model.
(Blue-Green 배포는 이전 버전에 있던 사용자 트래픽을 이전 버전과 거의 동일한 새 버전으로 점진적으로 이전하는 애플리케이션 릴리스 모델)

C. Fragment the monolithic platform into microservices.
(대규모 마이그레이션 이벤트 및 관련 위험을 피하기 위해 기능별로 마이그레이션이 수행하는 방법.)

Answer: AC

NO.29 The database administration team has asked you to help them improve the performance of their new database server running on Google Compute Engine. The database is for importing and normalizing their performance statistics and is built with MySQL running on Debian Linux. They have an n1- standard-8 virtual machine with 80 GB of SSD persistent disk.
What should they change to get better performance from this system?

요구사항: Debian Linux, MySQL, n1 - standard - 8 VM, 80GB SSD로 구축된 환경에서 데이타 베이스 팀이 성능향상을 요청했을 때, 바꿔야 할 옵션은?

해결방안:

C. Dynamically resize the SSD persistent disk to 500 GB.
(데이타베이스 팀이 요청한 것이기 때문에 디스크 처리량으로 접근한다.)

NO.30 Your customer is moving their corporate applications to Google Cloud Platform. The security team wants detailed visibility of all projects in the organization. You provision the Google Cloud Resource Manager and set up yourself as the org admin. What Google Cloud Identity and Access Management (Cloud IAM) roles should you give to the security team'?

요구사항 : 보안 팀이 모든 프로젝트의 visiblity를 원하는 경우 어떤 Google 클라우드 ID 및 액세스 관리 역할을 부여해야 하는가?

해결방법:

B. Org viewer, project viewer
(뷰어의 권한만으로 충분하다.)

NO.31 Your customer is moving an existing corporate application to Google Cloud Platform from an on- premises data center. The business owners require minimal user disruption. There are strict security team requirements for storing passwords.
What authentication strategy should they use?

C. Provision users in Google using the Google Cloud Directory Sync tool.

요구사항 : GCP로 이전할 때, 비밀번호를 저장하기 위해 사용하는 인증 전략 방법에 대한 질문

해결방법 : Google Directory는 여러 가지 수단으로 프로비저닝된 사용자가 풍부한 인증 기능을 활용할 수 있다. GCDS는 사용자와 그룹을 프로비저닝 할 수 있는 커넥터이다.

NO.32 You want your Google Kubernetes Engine cluster to automatically add or remove nodes based on CPUload.
What should you do?

A. Configure a HorizontalPodAutoscaler with a target CPU usage. Enable the Cluster Autoscaler from the GCP Console.

요구사항 : CPU load(부하)를 기반으로 구글 쿠버네티스 엔진 클러스터에 자동적으로 노드를 추가하거나 삭제하려고 할 경우, 어떻게 할 것인가

해결방법 : CPU 사용량으로 HorizontalPodAutoscaler를 구성한다. GCP 콘솔에서 Cluster Autoscaler를 활성화한다.

NO.33 A small number of API requests to your microservices-based application take a very long time.
You know that each request to the API can traverse many services. You want to know which service takes the longest in those cases. What should you do?

D. Instrument your application with Stackdriver Trace in order to break down the request latencies at each microservice.

요구사항 : API 요청이 통과하는 서비스 중 시간이 가장 오래 걸리는 서비스를 알고 싶은 경우, 어떻게 할 것인가

해결방법 : 각 마이크로 서비스의 요청 지연 시간을 Stackdriver Trace로 분해해서 측정한다.

NO.34 You want to make a copy of a production Linux virtual machine in the US-Central region. You want to manage and replace the copy easily if there are changes on the production virtual machine. You will deploy the copy as a new instances in a different project in the US-East region. What steps must you take?

D. Create a snapshot of the root disk, create an image file in Google Cloud Storage from the snapshot, and create a new virtual machine instance in the US-East region using the image file for the root disk.

요구사항 : 미국 중앙 지역에 프로덕션 리눅스 가상 머신의 복사본을 만드려고 한다. 가상 머신에 변경사항이 있는 경우, 복사본을 쉽게 관리 및 교체하려고 한다. 미국 동부 지역의 다른 프로젝트에 새 인스턴스로 복사본을 배포할 것이다. 어떤 조치를 취해야 하는가

해결방법 : 루트 디스크의 스냅샷을 생성하고, 스냅샷에서 Google Cloud Storage에 이미지 파일을 생성하고, 루트 디스크의 이미지 파일을 사용하여 미국 동부 지역에 새 가상 머신 인스턴스를 생성한다.

NO.35 You set up an autoscaling instance group to serve web traffic for an upcoming launch. After configuring the instance group as a backend service to an HTTP(S) load balancer, you notice that virtual machine (VM) instances are being terminated and re-launched every minute. The instances do not have a public IP address. You have verified the appropriate web response is coming from each

instance using the curl command. You want to ensure the backend is configured correctly. What should you do?

C. Ensure that a firewall rule exists to allow load balancer health checks to reach the instances in the instance group.

요구사항 : 백엔드가 올바르게 구성되었는지 확인하기 위해서 어떻게 해야하는가

해결방법 : 로드 밸런서 상태 검사가 인스턴스 그룹의 인스턴스에 연결할 수 있도록 허용하는 방화벽 규칙이 있는지 확인한다.

NO.36 One of the developers on your team deployed their application In Google Container Engine with the Dockerfile below. They report that their application deployments are taking too long.

```
FROM ubuntu:16.04

COPY . /src

RUN apt-get update && apt-get install -y python python-pip

RUN pip install -r requirements.txt
```

You want to optimize this Dockerfile for faster deployment times without adversely affecting the app's functionality. Which two actions should you take? Choose 2 answers

C. Use a slimmed-down base image like Alpine linux.

E. Copy the source after the package dependencies (Python and pip) are installed.

요구사항 : 도커 파일을 사용하여 Google Container Engine에 응용 프로그램을 배포했는데 구축 시간이 너무 오래 걸려, 앱에 부정적인 영향을 주지 않으면서 더 빠른 배포를 위해 도커 파일을 최적화하려는 경우, 어떻게 해야하는가

해결방법 : 알파인 리눅스처럼 슬림한 기본 이미지를 사용한다. 패키지 종속성(Python 및 pip)이 설치된 후 소스를 복사한다.

NO.37 You have been asked to select the storage system for the click-data of your company's large portfolio of websites. This data is streamed in from a custom website analytics package at a typical rate of 6,000 clicks per minute, with bursts of up to 8,500 clicks per second. It must been stored for
future analysis by your data science and user experience teams. Which storage infrastructure should you choose?

B. Google Cloud Bigtable

요구사항 : 클릭 데이터에 대한 스토리지 시스템을 선택해야 한다. 이 데이터는 분당 6000번의 클릭 속도로 초당 최대 8500번의 클릭이 폭발적으로 증가한다. 어떤 스토리지 인프라를 선택해야 하는가

해결방법 : 구글 클라우드 빅테이블

NO.38 Your organization requires that metrics from all applications be retained for 5 years for future analysis in possible legal proceedings. Which approach should you use?

D. Configure Stackdriver Monitoring for all Projects, and export to Google Cloud Storage.

요구사항 : 향후 분석을 위해 모든 애플리케이션의 측정 기준을 5년 동안 유지하도록 하였다. 어떤 방식을 사용해야 하는가

해결방법 : 모든 프로젝트에 대한 스택드라이버 모니터링 구성 그리고 구글 클라우드 스토리지로 내보내기

NO.39 Your company plans to migrate a multi-petabyte data set to the cloud. The data set must be available 24hrs a day. Your business analysts have experience only with using a SQL interface. How should you store the data to optimize it for ease of analysis?

A. Load data into Google BigQuery.

요구사항 : 귀사는 페타바이트의 데이터 세트를 클라우드로 마이그레이션할 계획이다. 이 데이터 세트는 24시간 내내 이용할 수 있어야 한다. 귀사의 비즈니스 분석가는 SQL 인터페이스 사용 경험만 가지고 있다. 데이터를 어떻게 저장해야 분석 용이성을 위해 최적화 할 수 있는가

해결방법 : Google Big Query는 24시간 SQL 인터페이스를 위한 것.

NO.40 Your company places a high value on being responsive and meeting customer needs quickly. Their primary business objectives are release speed and agility. You want to reduce the chance of security errors being accidentally introduced. Which two actions can you take? Choose 2 answers

B. Use source code security analyzers as part of the CI/CD pipeline.
E. Run a vulnerability security scanner as part of your continuous-integration /continuous-delivery (CI/CD) pipeline.

요구사항 : 귀사의 비즈니스 목표는 출시 속도와 민첩성이다. 보안 오류가 우연히 발생할 가능성을 줄이려는 경우 어떠한 행동을 취할 수 있는가

해결방법 : CI/CD 파이프라인의 일부로 소스 코드 보안 분석기를 사용한다. 연속 통합/연속 전달(CI/CD) 파이프라인의 일부로 취약성 보안 스캐너를 실행한다.

NO.41 A lead software engineer tells you that his new application design uses websockets and

HTTP sessions that are not distributed across the web servers. You want to help him ensure his application will run property on Google Cloud Platform. What should you do?

요구사항 : 웹 서버에 분산되지 않은 웹 소켓과 HTTP 세션을 사용할 때, Google Cloud Platform에서 속성을 실행하도록 도우려면 어떻게 해야하나?

C. Meet with the cloud operations team and the engineer to discuss load balancer options.
(클라우드 운영 팀, 엔지니어와 만나 로드 밸런서 옵션에 대해 논의해야함)

Answer: C

Explanation:

Google Cloud Platform (GCP) HTTP(S) load balancing provides global load balancing for HTTP(S) requests destined for your instances.
The HTTP(S) load balancer has native support for the WebSocket protocol.
(HTTP 로드 밸런서는 웹소켓 프로토콜을 기본적으로 지원)
References: https://cloud.google.com/compute/docs/load-balancing/http/

NO.42 Your company has decided to make a major revision of their API in order to create better experiences for their developers. They need to keep the old version of the API available and deployable, while allowing new customers and testers to try out the new API. They want to keep the same SSL and DNS records in place to serve both APIs. What should they do?

요구사항 : 이전 버전 API와 새로운 API를 모두 제공하기 위해 동일한 SSL 및 DNS레코드를 유지하려고 할 때

D. Use separate backend pools for each API path behind the load balancer.
(로드 밸런서 뒤의 각 API 경로에 대한 백엔드 풀 사용)

Answer: D

Explanation:

D is correct because an HTTP(S) load balancer can direct traffic reaching a single IP to different backends based on the incoming URL.
(HTTP 로드 밸런서가 수신 URL 기준으로 단일 IP에 도달하는 트래픽을 다른 백엔드로 유도 가능)

NO.43 Your company's test suite is a custom C++ application that runs tests throughout each day on Linux virtual machines. The full test suite takes several hours to complete, running on a limited number of on premises servers reserved for testing. Your company wants to move the testing infrastructure to the cloud, to reduce the amount of time it takes to fully test a change to the system, while changing the tests as little as possible. Which cloud infrastructure should you recommend?

요구사항 : 테스트 인프라를 클라우드로 전환 시, 시스템 변경 사항 테스트 시간 단축과 최대한 적게 변경하려면 어떤 클라우드 인프라를 추천하겠는가?

B. Google Compute Engine managed instance groups with auto-scaling

Answer: B

Explanation:
Google Compute Engine enables users to launch virtual machines (VMs) on demand. VMs can be launched from the standard images or custom images created by users.
Managed instance groups offer autoscaling capabilities that allow you to automatically add or remove instances from a managed instance group based on increases or decreases in load. Autoscaling helps your applications gracefully handle increases in traffic and reduces cost when the need for resources is lower.(Auto-scaling은 증가 조절과 자원의 필요성이 낮을때 비용절감 트래픽 도와줌)
References: https://cloud.google.com/compute/docs/autoscaler/

NO.44 As part of your backup plan, you set up regular snapshots of Compute Engine instances that are running. You want to be able to restore these snapshots using the fewest possible steps for replacement instances. What should you do?

요구사항: 대체 인스턴스에 대해 가능한 가장 적은 단계를 사용하여 스냅샷 복원하려면?
D. Use the snapshots to create replacement instances as needed.
(스냅 샷을 사용하여 필요에 따라 대체 인스턴스를 만든다.)
Answer: D

-> 인스턴스를 다시 만드는 방법에 대해 묻는 문제.

NO.45 Your company has decided to build a backup replica of their on-premises user authentication PostgreSQL database on Google Cloud Platform. The database is 4 TB, and large updates are frequent. Replication requires private address space communication. Which networking approach should you use?

요구사항 : GCP의 PostgreSQL 데이터베이스로 4TB 데이터베이스, 빈번한 대규모 업데이트, 개인 주소 공간 통신을 통한 백업 복제에 필요한 네트워킹 방식은?
A. Google Cloud Dedicated Interconnect (구글 클라우드 전용 인터커넥트)

Answer: A
Explanation:
Google Cloud Dedicated Interconnect provides direct physical connections and RFC 1918 communication between your on-premises network and Google's network. Dedicated Interconnect enables you to transfer large amounts of data between networks, which can be more cost effective than purchasing additional bandwidth over the public Internet or using VPN tunnels.
(Dedicated Interconnect는 온프레미스 네트워크와 Google 네트워크 간에 물리적인 직접 연결을 제공합니다. Dedicated Interconnect를 사용하면 네트워크 간에 대량의 데이터를 전송할 수 있다)

References: https://cloud.google.com/interconnect/docs/details/dedicated

NO.46 The operations manager asks you for a list of recommended practices that she should consider when migrating a J2EE application to the cloud. Which three practices should you recommend?
Choose 3 answers
요구사항. JAVA 2 Enterprise Edition을 클라우드로 마이그레이션 할 때 고려해야 할 권장 사례 목록3가지

A. Port the application code to run on Google App Engine. (GAE는 일반적인 JAVA API 표준을 지원)

D. Select an automation framework to reliably provision the cloud infrastructure.

E. Deploy a continuous integration tool with automated testing in a staging environment

해결방법 : 이 질문은 database나 test가 아닌 J2EE 애플리케이션 마이그레이션에 대해 물음.

Answer: ADE

Explanation:
https://cloud.google.com/appengine/docs/standard/java/tools/uploadinganapp
https://cloud.google.com/appengine/docs/standard/java/building-app/cloud-sql

NO.47 You have created several preemptible Linux virtual machine instances using Google Compute Engine. You want to properly shut down your application before the virtual machines are preempted. What should you do?

요구사항. 가상 머신이 선점되기 전에 애플리케이션을 제대로 종료하려면 어떻게 해야할까?

C. Create a shutdown script and use it as the value for a new metadata entry with the key shutdown script in the Cloud Platform Console when you create the new virtual machine instance.
(인스턴스가 종료되거나 다시 시작되기 직전에 명령을 실행하는 종료 스크립트를 만들고 실행해야됨.

Cloud Console에서 `shutdown-script` 메타데이터 키를 사용하여 종료 스크립트를 직접 지정합니다.

1. Cloud Console에서 **VM 인스턴스** 페이지로 이동합니다.

   VM 인스턴스로 이동

2. **인스턴스 만들기**를 클릭합니다.
3. **새 인스턴스 만들기** 페이지에서 인스턴스의 속성을 입력합니다. 고급 구성 옵션은 **관리, 보안, 디스크, 네트워킹, 단독 테넌시** 섹션을 참조하세요.
4. **메타데이터** 섹션에서 메타데이터 키로 `shutdown-script` 를 입력합니다.
5. **값** 상자에 종료 스크립트 콘텐츠를 제공합니다.
6. **만들기**를 클릭하여 인스턴스를 만듭니다.

)

Answer: C

NO.48 Your company has successfully migrated to the cloud and wants to analyze their data stream to optimize operations. They do not have any existing code for this analysis, so they are exploring all their options. These options include a mix of batch and stream processing, as they are running some hourly jobs and live-processing some data as it comes in. Which technology should they use for this?

요구사항 :데이터 스트림을 분석 시 일괄처리와 스트림(실시간)처리가 혼합되어 있을 때, 어떤 기술을 사용해야 하는지?

B. Google Cloud Dataflow

(Cloud Dataflow는 통합 스트림(실시간) 및 일괄 데이터 처리를 제공하는 완전 관리형 데이터 처리 서비스이다.)

Answer: B

Explanation:

Cloud Dataflow is a fully-managed service for transforming and enriching data in stream (real time) and batch (historical) modes with equal reliability and expressiveness -- no more complex workarounds or compromises needed.

References: https://cloud.google.com/dataflow/

NO.49 Your solution is producing performance bugs in production that you did not see in staging and test environments.

You want to adjust your test and deployment procedures to avoid this problem in the future. What should you do?

요구사항 : 솔루션은 스테이징 및 테스트 환경에서 볼 수없는 프로덕션 성능 버그를 생성한다. 향후 이 문제를 방지하기 위해 테스트 및 배포 절차를 조정하려고 할 때 , 해결방법은?

D. Deploy changes to a small subset of users before rolling out to production.

(프로덕션으로 롤아웃하기 전에 일부 사용자에게 변경 사항을 배포한다.

)

Answer: D

NO.50 Auditors visit your teams every 12 months and ask to review all the Google Cloud Identity and Access Management (Cloud IAM) policy changes in the previous 12 months. You want to streamline and expedite the analysis and audit process. What should you do?

요구사항 : 분석 및 감사 프로세스를 간소화하고 신속하게 처리하고자 할 때 어떻게 해야하나?

D. Enable Google Cloud Storage (GCS) log export to audit logs Into a GCS bucket and delegate access to the bucket.

(Google Cloud Storage (GCS) 로그 내보내기를 사용 설정하여 GCS 버킷에 대한 로그를 감사하고 버킷에 대한 액세스를 위임)

NO.51 Case Study: 1 - Mountkirk Games Case Study Company Overview

Answer: D

Mountkirk Games makes online, session-based. multiplayer games for the most popular mobile platforms.

Company Background

Mountkirk Games builds all of their games with some server-side integration and has historically used cloud providers to lease physical servers. A few of their games were more popular than expected, and they had problems scaling their application servers, MySQL databases, and analytics tools.

(이들의 게임 중 일부는 예상보다 인기가 높았고, 애플리케이션 서버, MySQL 데이터베이스 및 분석 툴을 확장하는 데 문제가 있었다.)

Mountkirk's current model is to write game statistics to files and send them through an ETL tool that loads them into a centralized MySQL database for reporting.

Solution Concept

Mountkirk Games is building a new game, which they expect to be very popular. (이 게임이 매우 인기가 있을 것으로 기대하고 있다.)

They plan to deploy the game's backend on Google Compute Engine so they can capture streaming metrics, run intensive analytics and take advantage of its autoscaling server environment and integrate with a managed NoSQL database.

Technical Requirements

Requirements for Game Backend Platform

1. Dynamically scale up or down based on game activity.
(게임 활동에 따라 동적으로 스케일업 또는 스케일다운 가능할 것.)
2. Connect to a managed NoSQL database service.
3. Run customized Linx distro.

Requirements for Game Analytics Platform

1. Dynamically scale up or down based on game activity.
(게임 활동에 따라 동적으로 스케일업 또는 스케일다운 가능할 것.)
2. Process incoming data on the fly directly from the game servers.
3. Process data that arrives late because of slow mobile networks.
4. Allow SQL queries to access at least 10 TB of historical data.
5. Process files that are regularly uploaded by users' mobile devices.
6. Use only fully managed services

CEO Statement

Our last successful game did not scale well (잘 확장되지가 않아) with our previous cloud provider, resuming in lower user adoption and affecting the game's reputation. Our investors want more key performance indicators (KPIs) to evaluate the speed and stability of the game, as well as other metrics that provide deeper insight into usage patterns so we can adapt the games to target users.

CTO Statement

Our current technology stack cannot provide the scale we need, so we want to replace MySQL and move to an environment that provides autoscaling, low latency load balancing, and frees us up from managing physical servers.

CFO Statement

We are not capturing enough user demographic data usage metrics, and other KPIs. As a result, we do not engage the right users. We are not confident that our marketing is targeting the right users, and we are not selling enough premium Blast-Ups inside the games, which dramatically impacts

our revenue.
For this question, refer to the Mountkirk Games case study. Mountkirk Games wants you to design their new testing strategy. How should the test coverage differ from their existing backends on the other platforms?

approaches. **B.** Unit tests are no longer required, only end-to-end tests.

A. Tests should scale well beyond the prior

C. Tests should be applied after the release is in the production environment. **D.** Tests should include directly testing the Google Cloud Platform (GCP) infrastructure.

Answer: A

Explanation:

From Scenario:

A few of their games were more popular than expected, and they had problems scaling their application servers, MySQL databases, and analytics tools.

Requirements for Game Analytics Platform include: Dynamically scale up or down based on game activity

A : (A) 테스트는 이전 테스트를 훨씬 초과하여 확장되어야 함.

왜냐하면 이 회사가 개발한 게임 중 일부는 예상보다 인기가 높았고, 애플리케이션 서버, MySQL 데이터베이스 및 분석 툴을 확장하는 데 문제가 있었기 때문이다.

NO.52 Case Study: 1 - Mountkirk Games Case Study

Company Overview

Mountkirk Games makes online, session-based. multiplayer games for the most popular mobile platforms.

Company Background

Mountkirk Games builds all of their games with some server-side integration and has historically used cloud providers to lease physical servers. A few of their games were more popular than expected, and they had problems scaling their application servers, MySQL databases, and analytics tools. Mountkirk's current model is to write game statistics to files and send them through an ETL tool that loads them into a centralized MySQL database for reporting.

Solution Concept

Mountkirk Games is building a new game, which they expect to be very popular. They plan to deploy the game's backend on Google Compute Engine so they can capture streaming metrics, run intensive analytics and take advantage of its autoscaling server environment and integrate with a managed NoSQL database.

Technical Requirements

Requirements for Game Backend Platform

1. Dynamically scale up or down based on game activity.
(게임 활동에 따라 동적으로 스케일업 또는 스케일다운 가능할 것.)
2. Connect to a managed NoSQL database service.
(관리되는 NoSQL 데이터베이스 서비스에 연결할 것.)

3. Run customized Linux distro.
(사용자 정의된 Linux 배포판을 실행할 것.)
Requirements for Game Analytics Platform
1. Dynamically scale up or down based on game activity.
2. Process incoming data on the fly directly from the game servers.
3. Process data that arrives late because of slow mobile networks.
4. Allow SQL queries to access at least 10 TB of historical data.
5. Process files that are regularly uploaded by users' mobile devices.
6. Use only fully managed services
CEO Statement
Our last successful game did not scale well with our previous cloud provider, resuming in lower user adoption and affecting the game's reputation. Our investors want more key performance indicators (KPIs) to evaluate the speed and stability of the game, as well as other metrics that provide deeper insight into usage patterns so we can adapt the gams to target users.
CTO Statement
Our current technology stack cannot provide the scale we need, so we want to replace MySQL

move to an environment that provides autoscaling, low latency load balancing, and frees us up from managing physical servers.
CFO Statement
We are not capturing enough user demographic data usage metrics, and other KPIs. As a result, we do not engage the right users. We are not confident that our marketing is targeting the right users, and we are not selling enough premium Blast-Ups inside the games, which dramatically impacts our revenue.
For this question, refer to the Mountkirk Games case study. Mountkirk Games has deployed their new backend on Google Cloud Platform (GCP).
You want to create a thorough testing process for new versions of the backend before they are released to the public.
(백엔드의 새 버전이 대중에게 공개되기 전에 철저한 테스트 프로세스를 생성하려는 경우.)
You want the testing environment to scale in an economical way.
(테스트 환경이 경제적인 방식으로 확장되기를 원하는 경우.)
How should you design the process?
A. Create a scalable environment in GCP for simulating production load.
B. Use the existing infrastructure to test the GCP-based backend at scale.
C. Build stress tests into each component of your application using resources internal to GCP to simulate load.
D. Create a set of static environments in GCP to test different levels of load -- for example, high, medium, and low.
Answer: A
Explanation:
From scenario: Requirements for Game Backend Platform
1. Dynamically scale up or down based on game activity
2. Connect to a managed NoSQL database service

3. Run customize Linux distro

A : (A)생산 부하 시뮬레이션을 위한 확장 가능한 환경을 GCP에 만들 것.

<게임 백엔드 플랫폼 요구 사항>

1. 게임 활동에 따라 동적으로 스케일업 또는 스케일다운해야 함.
2. 관리되는 NoSQL 데이터베이스 서비스에 연결
3. Linux 배포판사용자 지정 실행

NO.53 Case Study: 1 - Mountkirk Games Case Study
Company Overview
Mountkirk Games makes online, session-based. multiplayer games for the most popular mobile platforms.
Company Background
Mountkirk Games builds all of their games with some server-side integration and has historically used cloud providers to lease physical servers. A few of their games were more popular than expected, and they had problems scaling their application servers, MySQL databases, and analytics tools. Mountkirk's current model is to write game statistics to files and send them through an ETL tool that loads them into a centralized MySQL database for reporting.
Solution Concept
Mountkirk Games is building a new game, which they expect to be very popular. They plan to deploy the game's backend on Google Compute Engine (구글 컴퓨팅 엔진에 게임 백엔드를 배치할 계획이다.) so they can capture streaming metrics, run intensive analytics and take advantage of its autoscaling server environment and integrate with a managed NoSQL database.
Technical Requirements
Requirements for Game Backend Platform
1. Dynamically scale up or down based on game activity.
2. Connect to a managed NoSQL database service.
3. Run customized Linx distro.

Dynamically scale up or down based on game activity.

Requirements for Game Analytics Platform 1.

2. Process incoming data on the fly directly from the game servers.
3. Process data that arrives late because of slow mobile networks.
4. Allow SQL queries to access at least 10 TB of historical data.
5. Process files that are regularly uploaded by users' mobile devices.
6. Use only fully managed services
CEO Statement
Our last successful game did not scale well with our previous cloud provider, resuming in lower user adoption and affecting the game's reputation. Our investors want more key performance indicators (KPIs) to evaluate the speed and stability of the game, as well as other metrics that provide deeper insight into usage patterns so we can adapt the gams to target users.

CTO Statement
Our current technology stack cannot provide the scale we need, so we want to replace MySQL and move to an environment that provides autoscaling, low latency load balancing, and frees us up from managing physical servers (자동 스케일링, 짧은 지연 시간 로드 밸런싱을 제공하는 환경으로
전환하고 물리적 서버 관리에서 벗어나고자 한다.).
CFO Statement
We are not capturing enough user demographic data usage metrics, and other KPIs. As a result, we do not engage the right users. We are not confident that our marketing is targeting the right users, and we are not selling enough premium Blast-Ups inside the games, which dramatically impacts our revenue.
For this question, refer to the Mountkirk Games case study. Mountkirk Games wants to set up a continuous delivery pipeline (연속된 딜리버리 파이프라인을 구축하기를 원한다.). Their architecture includes many small services that they want to be able to update and roll back quickly (빨리 업데이트하고 롤백할 수 있음). Mountkirk Games has the following requirements:
- Services are deployed redundantly across multiple regions (여러 지역에 중복적으로 배치) in the US and Europe.
- Only frontend services are exposed on the public internet.
- They can provide a single frontend IP for their fleet of services.
- Deployment artifacts are immutable.
Which set of products should they use?
A. Google Cloud Storage, Google Cloud Dataflow, Google Compute Engine
B. Google Cloud Storage, Google App Engine, Google Network Load Balancer **C.** Google Container Registry, Google Container Engine, Google HTTP(s) Load Balancer **D.** Google Cloud Functions, Google Cloud Pub/Sub, Google Cloud Deployment Manager **E.** Container Registry, Google Kubernetes Engine, Cloud Load Balancing
Answer: E
Explanation:
Google Cloud Functions is a serverless environment to build and connect cloud services. Google Cloud Pub/Sub brings the scalability, flexibility, and reliability of enterprise message- oriented middleware to the cloud. By providing many-to-many, asynchronous messaging that decouples senders and receivers, it allows for secure and highly available communication between independently written applications. Google Cloud Pub/Sub delivers low-latency, durable messaging that helps developers quickly integrate systems hosted on the Google Cloud Platform and externally.
Incorrect Answers:
A: Cloud Dataflow is a fully-managed service for transforming and enriching data in stream (real time) and batch (historical) modes.

A : (E) 컨테이너 레지스트리, Google Kubernetes 엔진, 클라우드 로드 밸런싱

구글 클라우드 기능(Google Cloud Functions / GCF)은 클라우드 서비스를 구축하고 연결할 수 있는 서버가 없는 환경이다.
Google Cloud Pub/Sub는 엔터프라이즈 메시지 지향 미들웨어의 확장성, 유연성 및 안정성을 클라우드에 제공한다.
송신자와 수신자를 분리하는 다대다 비동기 메시징을 제공함으로써 독립적으로 작성된 애플리케이션 간에 안전하고 가용성이 높은 통신을 가능하게 한다.
구글 클라우드 퍼브/서브에서는 개발자들이 구글 클라우드 플랫폼에 호스팅된 시스템을 외부와 신속하게 통합할 수 있도록 도와주는 낮은 지연 시간과 지속 가능한 메시징을 제공한다.

C: Store your private Docker container images on Cloud Platform for fast, scalable retrieval and deployment. Container Registry is a private Docker repository that works with popular continuous delivery systems. It runs on Cloud Platform to provide consistent uptime on an infrastructure protected by Google's security. You pay only for storage and internet egress you use, there is no per image fee.
Reference: https://cloud.google.com/load-balancing/
https://cloud.google.com/solutions/ansible-with-spinnaker-tutorial
http://blog.armory.io/what-is-immutable-infrastructure/
https://cloud.google.com/compute/docs/load-balancing/http/

NO.54 Case Study: 1 - Mountkirk Games Case Study
Company Overview
Mountkirk Games makes online, session-based. multiplayer games for the most popular mobile platforms.
Company Background
Mountkirk Games builds all of their games with some server-side integration and has historically used cloud providers to lease physical servers. A few of their games were more popular than expected, and they had problems scaling their application servers, MySQL databases, and analytics tools. Mountkirk's current model is to write game statistics to files and send them through an ETL tool that loads them into a centralized MySQL database for reporting.
Solution Concept
Mountkirk Games is building a new game, which they expect to be very popular. They plan to deploy the game's backend on Google Compute Engine so they can capture streaming metrics, run intensive analytics and take advantage of its autoscaling server environment and integrate with a managed NoSQL database.
Technical Requirements
Requirements for Game Backend Platform
1. Dynamically scale up or down based on game activity.
2. Connect to a managed NoSQL database service.
3. Run customized Linx distro.
Requirements for Game Analytics Platform
1. Dynamically scale up or down based on game activity.
2. Process incoming data on the fly directly from the game servers.
3. Process data that arrives late because of slow mobile networks.
4. Allow SQL queries to access at least 10 TB of historical data.
5. Process files that are regularly uploaded by users' mobile devices.
6. Use only fully managed services
CEO Statement
Our last successful game did not scale well with our previous cloud provider, resuming in lower user adoption and affecting the game's reputation. Our investors want more key performance indicators (KPIs) to evaluate the speed and stability of the game, as well as other metrics that provide deeper insight into usage patterns so we can adapt the gams to target users.
CTO Statement
Our current technology stack cannot provide the scale we need, so we want to replace MySQL and move to an environment that provides autoscaling, low latency load balancing, and frees us up from managing physical servers.

CFO Statement
We are not capturing enough user demographic data usage metrics, and other KPIs. As a result, we do not engage the right users. We are not confident that our marketing is targeting the right users, and we are not selling enough premium Blast-Ups inside the games, which dramatically impacts our revenue.
For this question, refer to the Mountkirk Games case study. Mountkirk Games' gaming servers are not automatically scaling properly. Last month, they rolled out a new feature, which suddenly became very popular. (갑자기 매우 유명해짐) A record number of users are trying to use the service, but many of them are getting 503 errors and very slow response times.
(기록적인 이용자들이 서비스를 이용하려 시도하고 있지만, 대부분 503건의 오류와 매우 느린 응답 시간이 발생하고 있는 경우가 많다.)
What should they investigate first?

A. Verify that the database is online.
B. Verify that the project quota hasn't been exceeded.
C. Verify that the new feature code did not introduce any performance bugs.
D. Verify that the load-testing team is not running their tool against production.
Answer: B

A : (B) 프로젝트 할당량이 초과되지 않았는지 확인.

NO.55 Case Study: 1 - Mountkirk Games Case Study
Company Overview
Mountkirk Games makes online, session-based. multiplayer games for the most popular mobile platforms.
Company Background
Mountkirk Games builds all of their games with some server-side integration and has historically used cloud providers to lease physical servers. A few of their games were more popular than expected, and they had problems scaling their application servers, MySQL databases, and analytics tools. Mountkirk's current model is to write game statistics to files and send them through an ETL tool that loads them into a centralized MySQL database for reporting.
Solution Concept
Mountkirk Games is building a new game, which they expect to be very popular. They plan to deploy the game's backend on Google Compute Engine so they can capture streaming metrics, run intensive analytics and take advantage of its autoscaling server environment and integrate with a managed NoSQL database.
<Technical Requirements : 기술요구사항>

Requirements for Game Backend Platform
1. Dynamically scale up or down based on game activity.
2. Connect to a managed NoSQL database service.
3. Run customized Linx distro.

Requirements for Game Analytics Platform

1. Dynamically scale up or down based on game activity.
2. Process incoming data on the fly directly from the game servers.
3. Process data that arrives late because of slow mobile networks.
4. Allow SQL queries to access at least 10 TB of historical data.
5. Process files that are regularly uploaded by users' mobile devices.
6. Use only fully managed services

CEO Statement

Our last successful game did not scale well with our previous cloud provider, resuming in lower user adoption and affecting the game's reputation. Our investors want more key performance indicators (KPIs) to evaluate the speed and stability of the game, as well as other metrics that provide deeper

insight into usage patterns so we can adapt the gams to target users.

CTO Statement

Our current technology stack cannot provide the scale we need, so we want to replace MySQL and move to an environment that provides autoscaling, low latency load balancing, and frees us up from managing physical servers.

CFO Statement

We are not capturing enough user demographic data usage metrics, and other KPIs. As a result, we do not engage the right users. We are not confident that our marketing is targeting the right users, and we are not selling enough premium Blast-Ups inside the games, which dramatically impacts our revenue.

For this question, refer to the Mountkirk Games case study Mountkirk Games needs to create a repeatable and configurable mechanism for deploying isolated application environments (격리된 애플리케이션 환경을 배포하기 위해 반복 가능하고 구성 가능한 메커니즘을 생성해야 함을 참조하십시오). Developers and testers can access each other's environments and resources, but they cannot access staging or production resources (개발자와 테스터는 서로의 환경과 자원에 접근할 수 있지만 스테이징이나 생산 자원에 접근할 수는 없다.)

The staging environment needs access to some services from production.

What should you do to isolate development environments from staging and production?

A. Create a project for development and test and another for staging and production. **B.** Create a network for development and test and another for staging and production. **C.** Create one subnetwork for development and another for staging and production. **D.** Create one project for development, a second for staging and a third for production.

Answer: A

Explanation:

https://cloud.google.com/appengine/docs/standard/go/creating-separate-dev-environments

A : (A) 개발 및 테스트를 위한 프로젝트, 스테이징 및 프로덕션을 위한 다른 프로젝트를 만들 것.

NO.56 For this question, refer to the Mountkirk Games case study. Mountkirk Games wants to set up a real-time analytics platform for their new game. The new platform must meet their technical requirements. Which combination of Google technologies will meet all of their

requirements?

(Mountkirk Games는 새로운 게임에 대한 실시간 분석 플랫폼을 구축하기를 원한다. 새로운 플랫폼은 그들의 기술적 요구사항을 충족시켜야 한다. 구글 기술의 어떤 조합이 그들의 모든 요구사항을 충족시킬 것인가?)

A. Container Engine, Cloud Pub/Sub, and Cloud SQL

B. Cloud Dataflow, Cloud Storage, Cloud Pub/Sub, and BigQuery

C. Cloud SQL, Cloud Storage, Cloud Pub/Sub, and Cloud Dataflow

D. Cloud Dataproc, Cloud Pub/Sub, Cloud SQL, and Cloud Dataflow

E. Cloud Pub/Sub, Compute Engine, Cloud Storage, and Cloud Dataproc

Answer: B

Explanation:

Ingest millions of streaming events per second from anywhere in the world with Cloud Pub/Sub, powered by Google's unique, high-speed private network. Process the streams with Cloud Dataflow to ensure reliable, exactly-once, low-latency data transformation. Stream the transformed data into BigQuery, the cloud-native data warehousing service, for immediate analysis via SQL or popular visualization tools.

From scenario: They plan to deploy the game's backend on Google Compute Engine so they can capture streaming metrics, run intensive analytics.

Requirements for Game Analytics Platform

1. Dynamically scale up or down based on game activity
2. Process incoming data on the fly directly from the game servers
3. Process data that arrives late because of slow mobile networks

A : (B) Cloud Dataflow, Cloud Storage, Cloud Pub/Sub, and BigQuery

Google만의 '고속 개인 네트워크'를 통해 클라우드 Pub/Sub를 이용하여 전 세계 어디서나 초당 수백만 개의 스트리밍 이벤트를 수집.

Cloud Dataflow를 사용하여 스트림을 처리하여 안정적이고 정확하며 대기 시간이 짧은 데이터 변환을 보장.

변환된 데이터를 클라우드 네이티브 데이터 웨어하우징 서비스인 BigQuery에 스트리밍하여 SQL 또는 널리 사용되는
시각화 툴을 통해 즉시 분석.

4. Allow SQL queries to access at least 10 TB of historical data
5. Process files that are regularly uploaded by users' mobile devices
6. Use only fully managed services

References: https://cloud.google.com/solutions/big-data/stream-analytics/

NO.57 Case Study: 2 - TerramEarth Case Study

Company Overview

TerramEarth manufactures heavy equipment for the mining and agricultural industries: About 80% of their business is from mining and 20% from agriculture. They currently have over 500 dealers and service centers in 100 countries. Their mission is to build products that make their customers more

productive.

Company Background

TerramEarth formed in 1946, when several small, family owned companies combined to retool after World War II. The company cares about their employees and customers and considers them to be extended members of their family.

TerramEarth is proud of their ability to innovate on their core products and find new markets as their customers' needs change. For the past 20 years trends in the industry have been largely toward increasing productivity by using larger vehicles with a human operator.

Solution Concept

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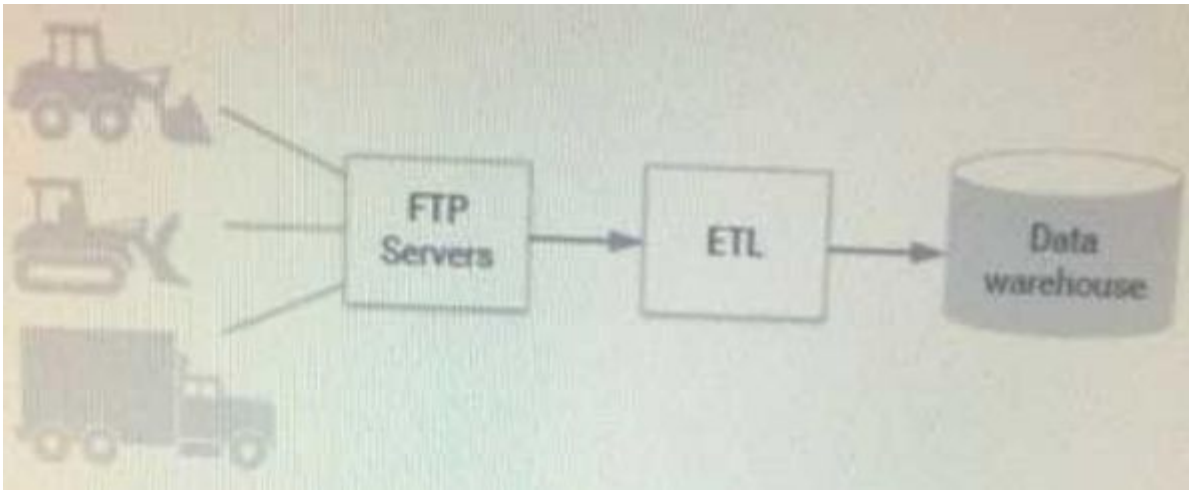
Existing Technical Environment



TerramEarth's existing architecture is composed of Linux-based systems that reside in a data center. These systems gzip CSV files from the field and upload via FTP, transform and aggregate them, and place the data in their data warehouse. Because this process takes time, aggregated reports are based on data that is 3 weeks old.

With this data, TerramEarth has been able to preemptively stock replacement parts and reduce unplanned downtime of their vehicles by 60%. However, because the data is stale, some customers are without their vehicles for up to 4 weeks while they wait for replacement parts.

Business Requirements

- Decrease unplanned vehicle downtime to less than 1 week, without increasing the cost of carrying surplus inventory
- Support the dealer network with more data on how their customers use their equipment IP better position new products and services.
- Have the ability to partner with different companies-especially with

seed and fertilizer suppliers in the fast-growing agricultural
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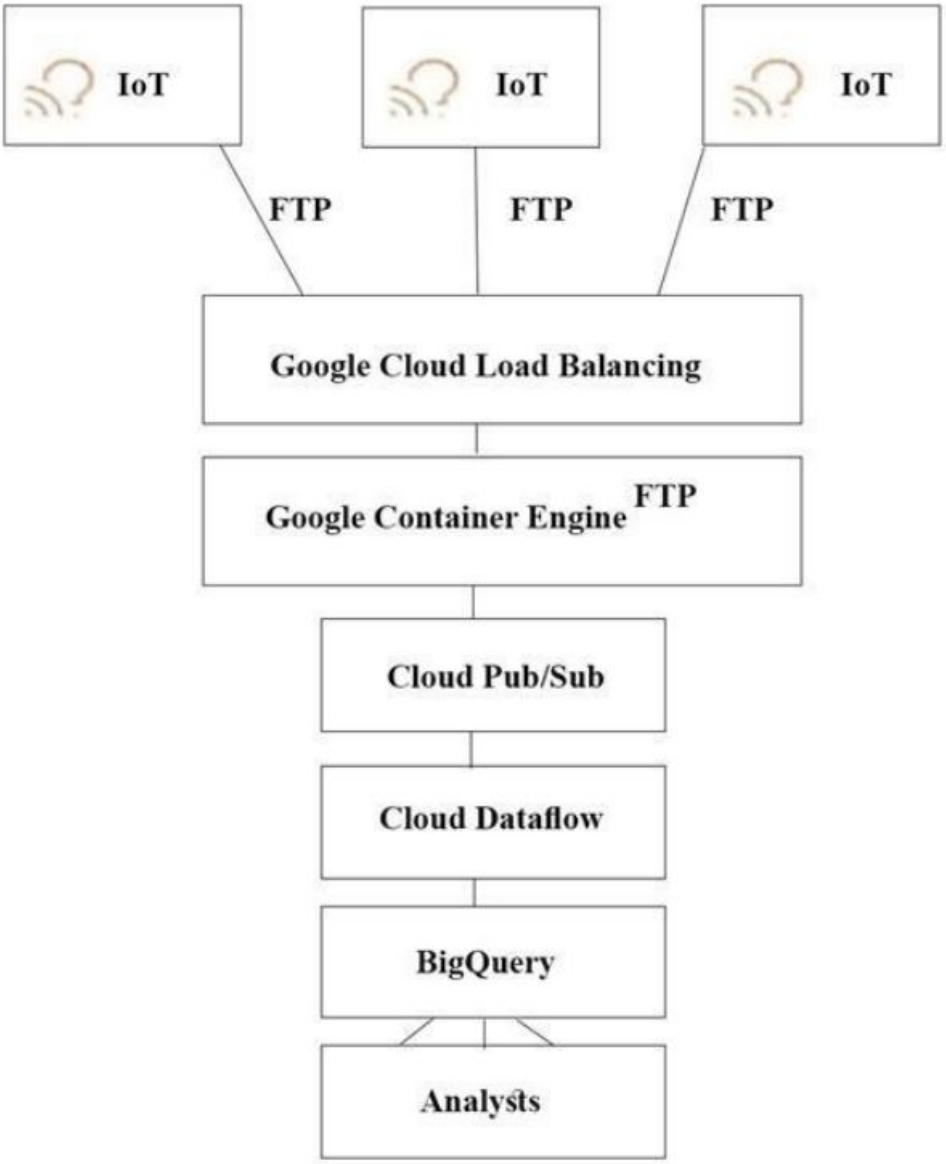
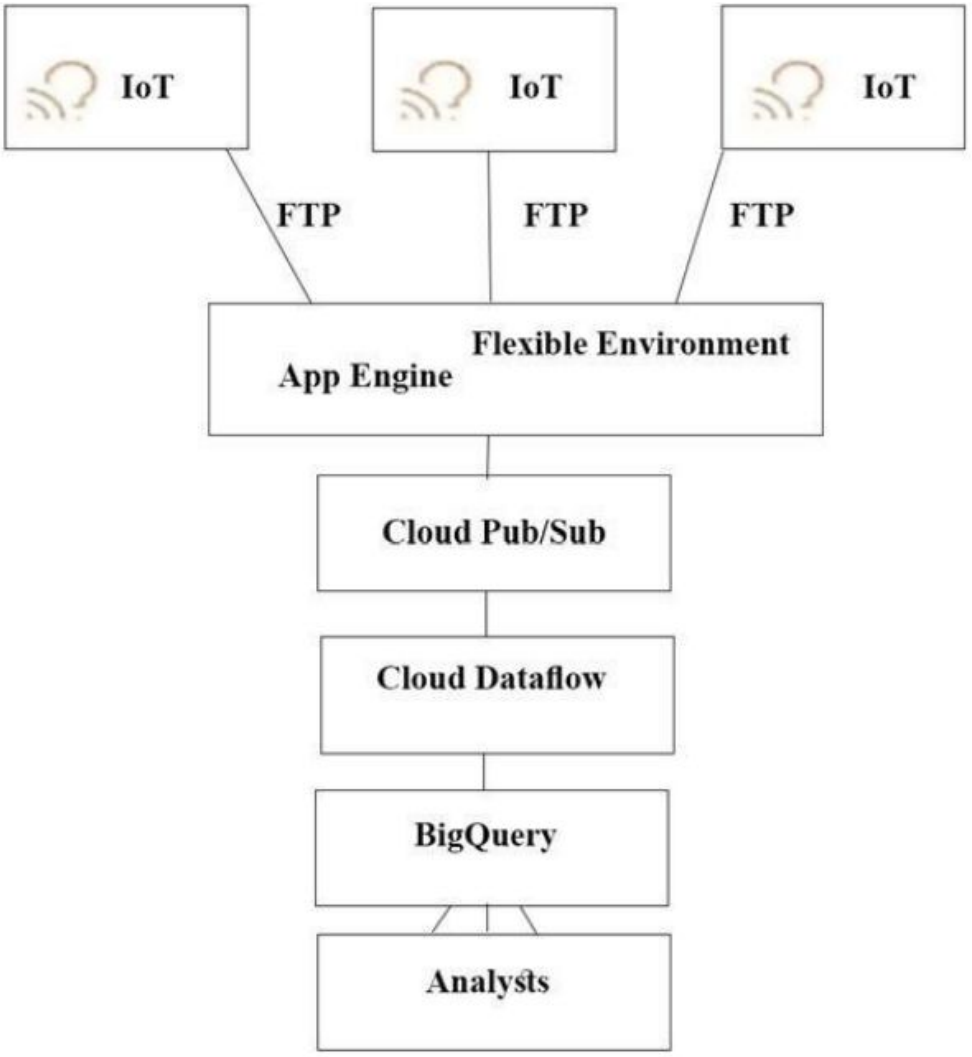
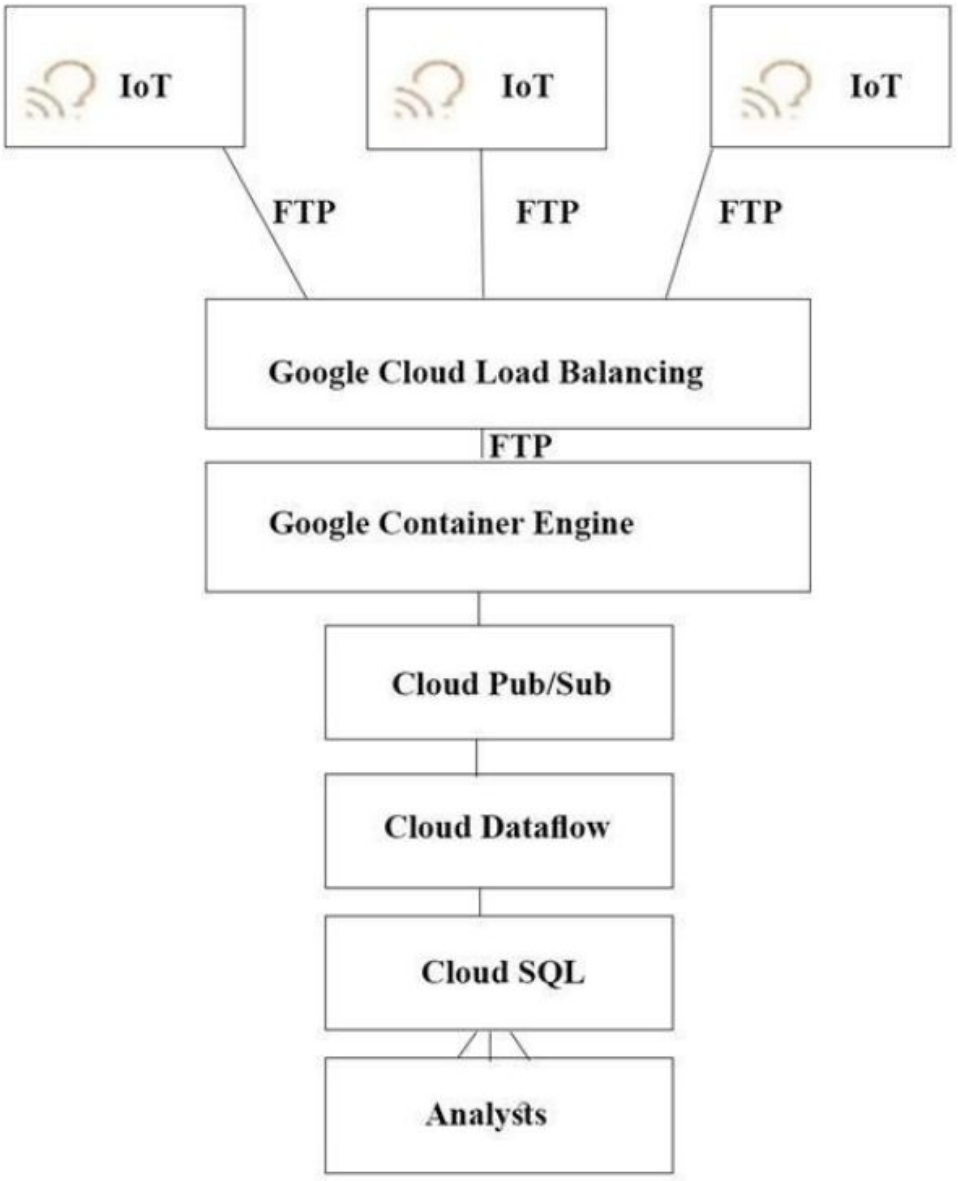
For this question, refer to the TerramEarth case study. TerramEarth's CTO wants to use the raw data from connected vehicles to help identify approximately when a vehicle in the field will have a catastrophic failure.
(TerramEarth의 CTO는 연결된 차량의 미가공 데이터를 사용하여 현장 차량에 치명적인 고장이 발생할 경우 대략적으로 식별하고자 한다.)
You want to allow analysts to centrally query the vehicle data.
(분석가가 차량 데이터를 중앙에서 쿼리할 수 있도록 허용하려는 경우)
Which architecture should you recommend?
A.

B.

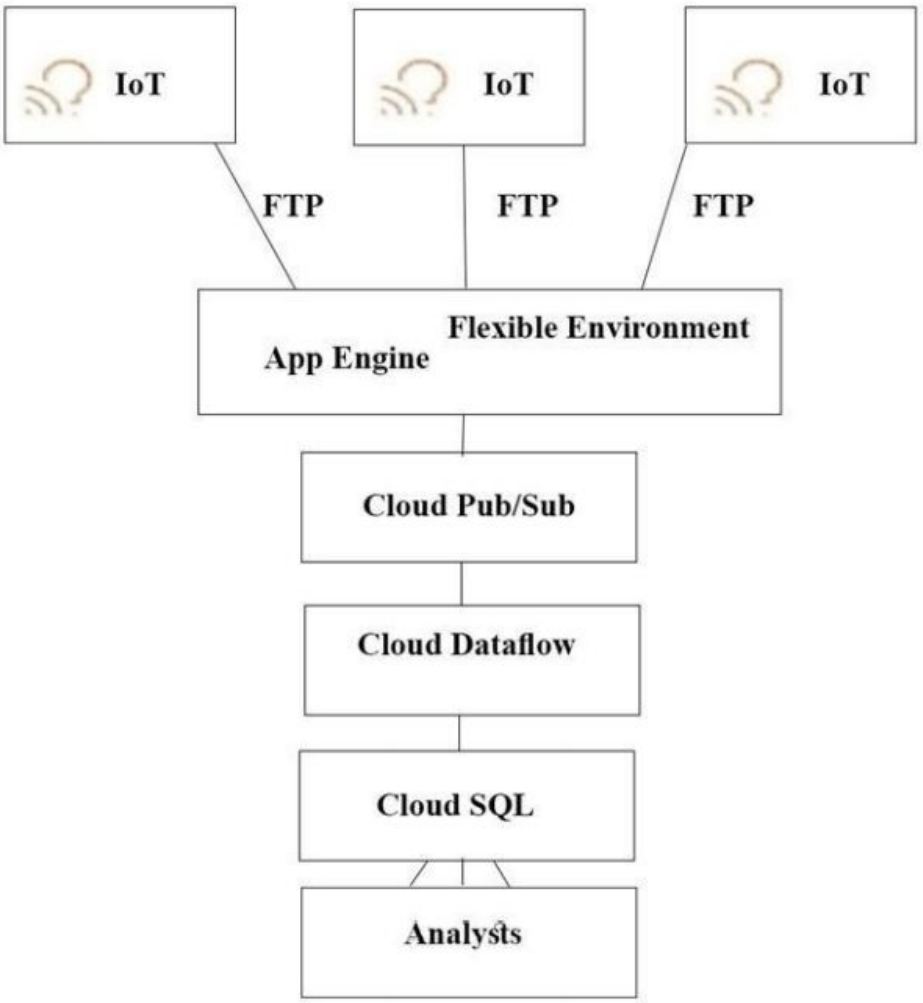

IoT
IoT
IoT
FTP
FTP
FTP
Google Cloud Load Balancing
Google Container Engine
FTP
Cloud Pub/Sub
Cloud Dataflow
BigQuery
Analysts


IoT
IoT
IoT
FTP
FTP
FTP
App Engine
Flexible Environment
Cloud Pub/Sub
Cloud Dataflow
BigQuery
Analysts

C.


IoT
IoT
IoT
FTP
FTP
FTP
Google Cloud Load Balancing
FTP
Google Container Engine
Cloud Pub/Sub
Cloud Dataflow
Cloud SQL
Analysts

D.



Answer: A

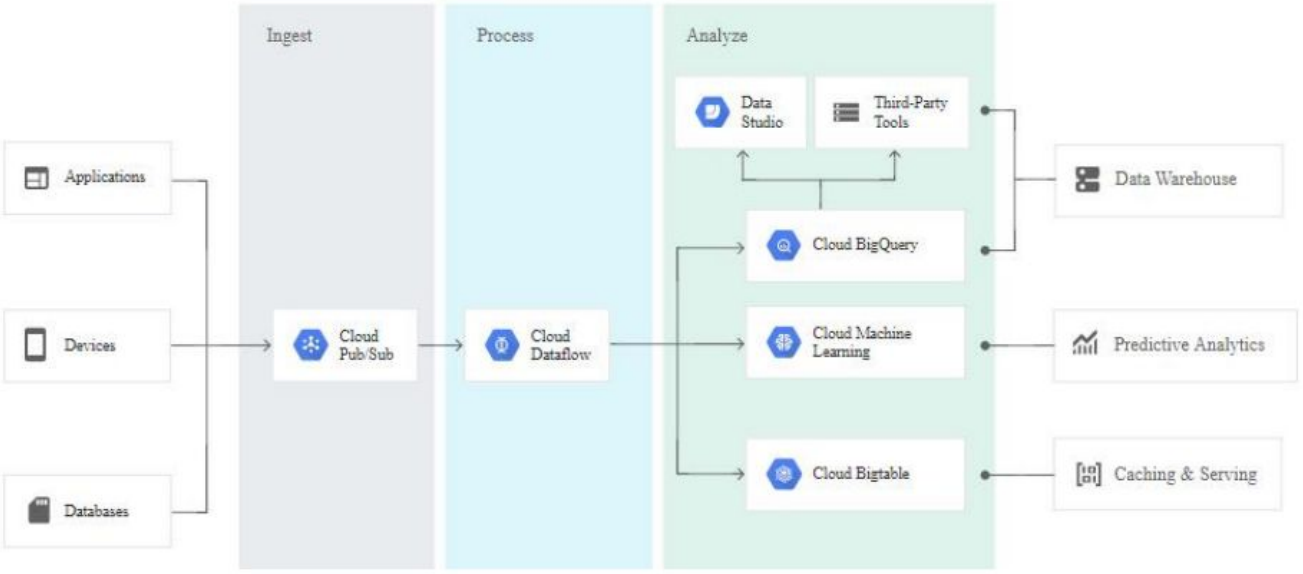
Explanation:

The push endpoint can be a load balancer.

A container cluster can be used.

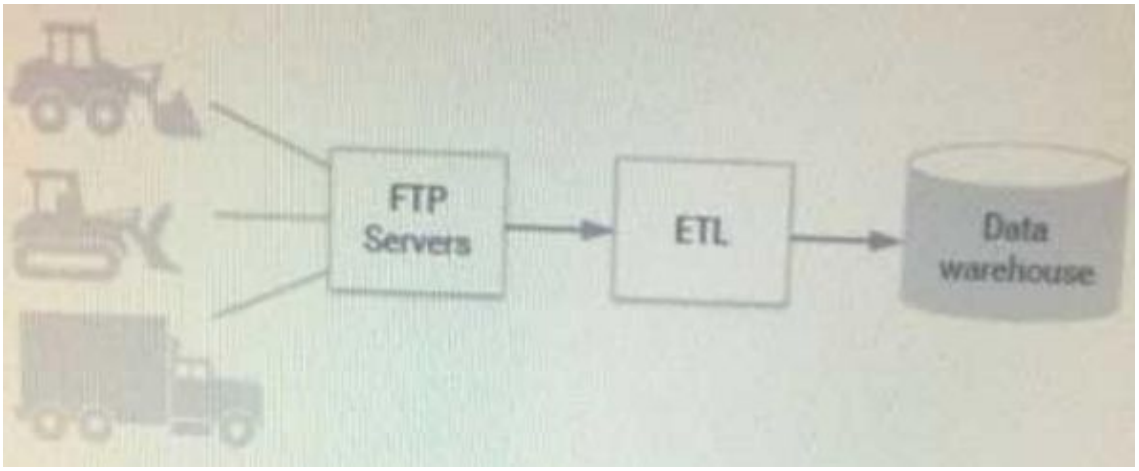
Cloud Pub/Sub for Stream Analytics

A : (A) 푸시 끝점은 로드 밸런싱 장치가 될 수 있다.
컨테이너 클러스터를 사용할 수 있다.
스트림 분석을 위한 클라우드 퍼브/서브



References: https://cloud.google.com/pubsub/
https://cloud.google.com/solutions/iot/
https://cloud.google.com/solutions/designing-connected-vehicle-platform
https://cloud.google.com/solutions/designing-connected-vehicle-platform#data_ingestion
http://www.eweek.com/big-data-and-analytics/google-touts-value-of-cloud-iot-core-for-analyzing connected-car-data
https://cloud.google.com/solutions/iot/

NO.58 Case Study: 2 - TerramEarth Case Study
Company Overview
TerramEarth manufactures heavy equipment for the mining and agricultural industries: About 80% of their business is from mining and 20% from agriculture. They currently have over 500 dealers and service centers in 100 countries. Their mission is to build products that make their customers more productive.
Company Background
TerramEarth formed in 1946, when several small, family owned companies combined to retool after World War II. The company cares about their employees and customers and considers them to be extended members of their family.
TerramEarth is proud of their ability to innovate on their core products and find new markets as their customers' needs change. For the past 20 years trends in the industry have been largely toward increasing productivity by using larger vehicles with a human operator.
Solution Concept
There are 20 million TerramEarth vehicles in operation that collect 120 fields of data per second. Data is stored locally on the vehicle and can be accessed for analysis when a vehicle is serviced. The data is downloaded via a maintenance port. This same port can be used to adjust operational parameters, allowing the vehicles to be upgraded in the field with new computing modules. Approximately 200,000 vehicles are connected to a cellular network, allowing TerramEarth to collect data directly. At a rate of 120 fields of data per second, with 22 hours of operation per day. TerramEarth collects a total of about 9 TB/day from these connected vehicles. Existing Technical Environment



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With this data, TerramEarth has been able to preemptively stock replacement parts and reduce unplanned downtime of their vehicles by 60%. However, because the data is stale, some customers are without their vehicles for up to 4 weeks while they wait for replacement parts. Business Requirements
- Decrease unplanned vehicle downtime to less than 1 week, without increasing the cost of carrying surplus inventory
(- 잉여 재고 운반 비용 증가 없이 계획되지 않은 차량 가동 중단 시간을 1주일 미만으로 단축)
- Support the dealer network with more data on how their customers use their equipment IP better position new products and services.
(- 고객이 장비를 사용하는 방법에 대한 자세한 데이터로 딜러망 지원 IP를 통해 새로운 제품과 서비스를 포지셔닝.)
- Have the ability to partner with different companies-especially with seed and fertilizer suppliers in the fast-growing agricultural business-to create compelling joint offerings for their customers
(- 다른 기업, 특히 빠르게 성장하고 있는 농업 비즈니스에서 종자 및 비료 공급업체와 파트너십을 통해 고객을 위한 매력적인 공동 오퍼링 창출)

CEO Statement
We have been successful in capitalizing on the trend toward larger vehicles to increase the productivity of our customers. Technological change is occurring rapidly and TerramEarth has taken advantage of connected devices technology to provide our customers with better services, such as our intelligent farming equipment. With this technology, we have been able to increase farmers' yields by 25%, by using past trends to adjust how our vehicles operate. These advances have led to the rapid growth of our agricultural product line, which we expect will generate 50% of our revenues by 2020.
CTO Statement
Our competitive advantage has always been in the manufacturing process with our ability to build better vehicles for tower cost than our competitors. However, new products with different approaches are constantly being developed, and I'm concerned that we lack the skills to undergo the next wave of transformations in our industry. Unfortunately, our CEO doesn't take technology obsolescence seriously and he considers the many new companies in our industry to be niche players. My goals are to build our skills while addressing immediate market needs through incremental innovations.
For this question, refer to the TerramEarth case study. The TerramEarth development team wants

to create an API to meet the company's business requirements. You want the development team to focus their development effort on business value versus creating a custom framework.
(회사의 비즈니스 요구사항에 맞는 API를 만들고 싶어한다. 개발 팀이 맞춤형 프레임워크를 만드는 대신 비즈니스 가치에 개발 노력을 집중하기를 원하는 경우. 그들은 어떤 방법을 사용해야 하는가?)

Which method should they use?

A. Use Google App Engine with Google Cloud Endpoints. Focus on an API for dealers and partners.

B. Use Google App Engine with a JAX-RS Jersey Java-based framework. Focus on an API for the public.
C. Use Google App Engine with the Swagger (open API Specification) framework. Focus on an API for the public.
D. Use Google Container Engine with a Django Python container. Focus on an API for the public. **E.** Use Google Container Engine with a Tomcat container with the Swagger (Open API Specification) framework. Focus on an API for dealers and partners.

Answer: A

Explanation:
Develop, deploy, protect and monitor your APIs with Google Cloud Endpoints. Using an Open API Specification or one of our API frameworks, Cloud Endpoints gives you the tools you need for every phase of API development.
From scenario:
Business Requirements
Decrease unplanned vehicle downtime to less than 1 week, without increasing the cost of carrying surplus inventory Support the dealer network with more data on how their customers use their equipment to better position new products and services Have the ability to partner with different companies - especially with seed and fertilizer suppliers in the fast-growing agricultural business - t o create compelling joint offerings for their customers.
Reference: https://cloud.google.com/certification/guides/cloud-architect/casestudy-terramearth

A : (A) Google Cloud Endpoint와 함께 Google App Engine을 사용할 것. 딜러 및 파트너를 위한 API에 집중해야 함.

Google Cloud Endpoint를 사용하여 API 개발, 배포, 보호 및 모니터링 개방형 API 규격 또는 NAT의 API 프레임워크 중 하나를 사용하는 클라우드 엔드포인트는 API 개발의 모든 단계에 필요한 도구를 제공한다.

NO.59 Case Study: 2 - TerramEarth Case Study
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Company Background

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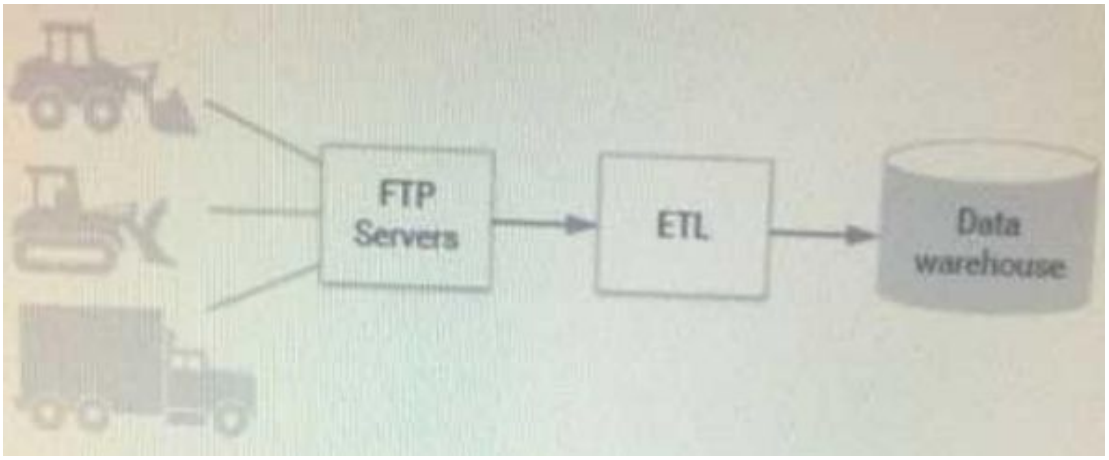
Solution Concept

There are 20 million TerramEarth vehicles in operation that collect 120 fields of data per second. Data is stored locally on the vehicle and can be accessed for analysis when a vehicle is serviced. The data is downloaded via a maintenance port. This same port can be used to adjust operational parameters, allowing the vehicles to be upgraded in the field with new computing modules. Approximately 200,000 vehicles are connected to a cellular network, allowing TerramEarth to collect data directly. At a rate of 120 fields of data per second, with 22 hours of operation per day. TerramEarth collects a total of about 9 TB/day from these connected vehicles. Existing Technical Environment



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For this question, refer to the TerramEarth case study.
Your development team has created a structured API to retrieve vehicle data.
(귀사의 개발 팀은 차량 데이터를 검색하기 위해 구조화된 API를 만들었다.)
They want to allow third parties to develop tools for dealerships that use this vehicle event data.
(이들은 제3자가 이 차량 이벤트 데이터를 사용하는 대리점을 위한 도구를 개발할 수 있도록 허용하고자 한다.)

You want to support delegated authorization against this data. What should you do?
A. Build or leverage an OAuth-compatible access control system.
B. Build SAML 2.0 SSO compatibility into your authentication system.
C. Restrict data access based on the source IP address of the partner systems. **D.** Create secondary credentials for each dealer that can be given to the trusted third party. ***Answer:***
A
Explanation:
Delegate application authorization with OAuth2
Cloud Platform APIs support OAuth 2.0, and scopes provide granular authorization over the methods that are supported. Cloud Platform supports both service-account and user-account OAuth, also called three-legged OAuth.
References: https://cloud.google.com/docs/enterprise/best-practices-for-enterprise organizations#delegate_application_authorization_with_oauth2
https://cloud.google.com/appengine/docs/flexible/go/authorizing-apps

A : (A) OAuth 호환 액세스 제어 시스템을 구축하거나 활용할 것.

클라우드 플랫폼 API는 OAuth 2.0을 지원하며 스코프는 지원되는 방법에 대해 세분화된 인증을 제공한다. 클라우드 플랫폼은 서비스 어카운트와 사용자 어카운트 OAuth를 모두 지원하며, 다리가 세 개인 OAuth라고도 한다.

NO.60 Case Study: 2 - TerramEarth Case Study

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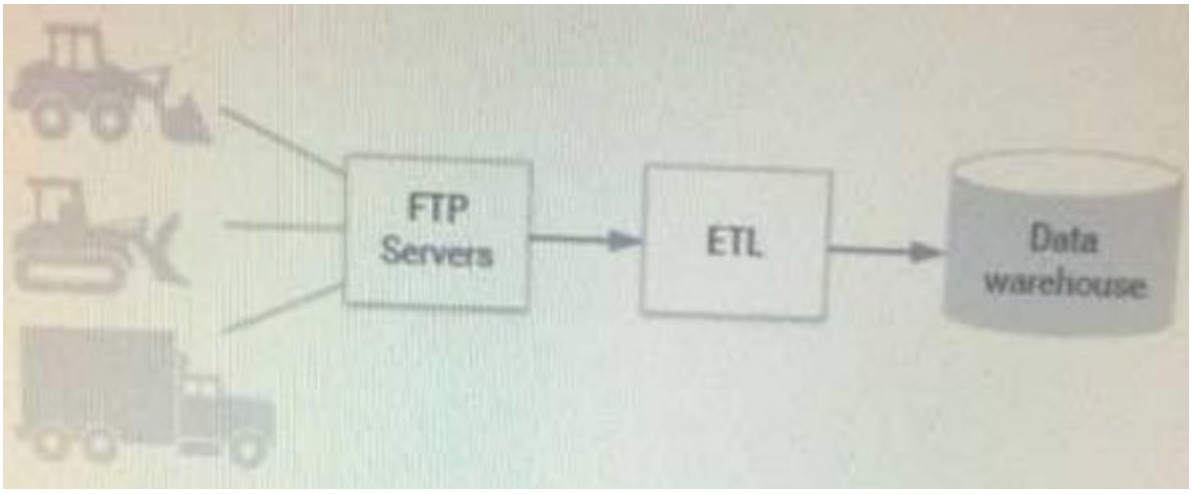

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For this question, refer to the TerramEarth case study. TerramEarth plans to connect all 20 million vehicles in the field to the cloud. This increases the volume to 20 million 600 byte records a second for 40 TB an hour. How should you design the data ingestion?
(이 분야의 차량 2000만대를 모두 클라우드에 연결할 계획이다. 이것은 시간당 40TB의 초당 2000만 600바이트의 기록으로 볼륨을 증가시킨다. 데이터 수집을 어떻게 설계해야 하는가?)

A. Vehicles write data directly to GCS.
B. Vehicles write data directly to Google Cloud Pub/Sub.
C. Vehicles stream data directly to Google BigQuery.
D. Vehicles continue to write data using the existing system (FTP).
Answer: C
Explanation:
Streamed data is available for real-time analysis within a few seconds of the first streaming insertion into a table.
Instead of using a job to load data into BigQuery, you can choose to stream your data into BigQuery one record at a time by using the tabledata().insertAll() method. This approach enables querying data without the delay of running a load job.

References: https://cloud.google.com/bigquery/streaming-data-into-bigquery

A : (C) 차량은 구글 빅쿼리로 직접 데이터를 스트리밍한다.

스트리밍 데이터는 테이블에 처음 스트리밍을 삽입한 후 몇 초 이내에 실시간 분석에 사용할 수 있다.

작업을 사용하여 데이터를 BigQuery에 로드하는 대신 tableata().insertAll() 방법을 사용하여 데이터를 한 번에 한 레코드씩 BigQuery로 스트리밍한다.
이 접근방식은 로드 작업 실행 지연 없이 데이터를 쿼리할 수 있다.