Exam : Professional-Cloud-Architect

Title : Google Certified Professional - Cloud Architect (GCP)

Vendor : Google

Version : V16.35

NO.61 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.

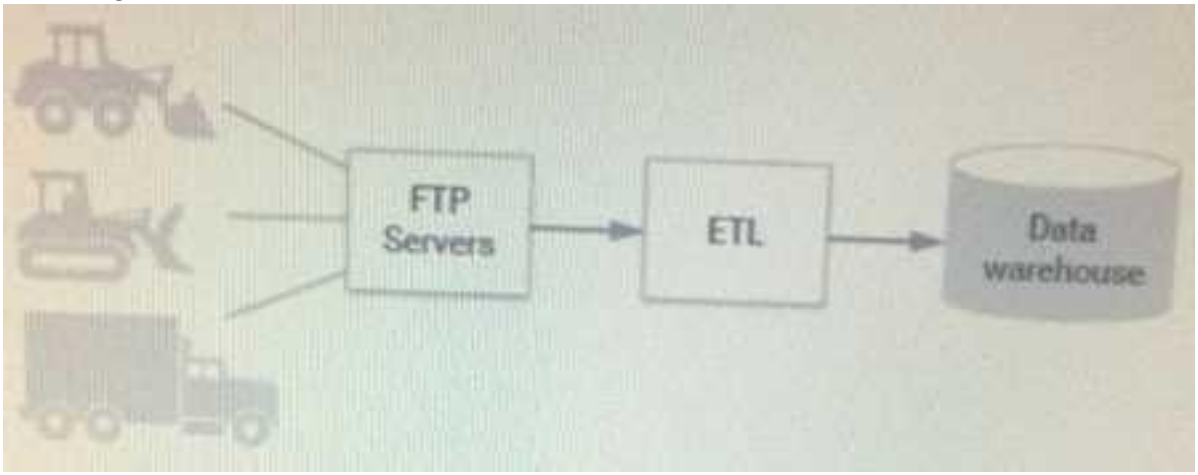
TerramEarth is proud of their ability to innovate on their core products and find new markets as their customers' needs change. For the past 20 years trends in the industry have been largely toward increasing productivity by using larger vehicles with a human operator.

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



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 business-to create compelling joint offerings for their customers

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.

You analyzed TerramEarth's business requirement to reduce downtime, and found that they can achieve a majority of time saving by reducing customers' wait time for parts.

You decided to focus on reduction of the 3 weeks aggregate reporting time.
Which modifications to the company's processes should you recommend?
요구사항 : 보고시간 단축을 위해 회사 프로세스중 어느것을 수정하는걸 추천해야 하는지?

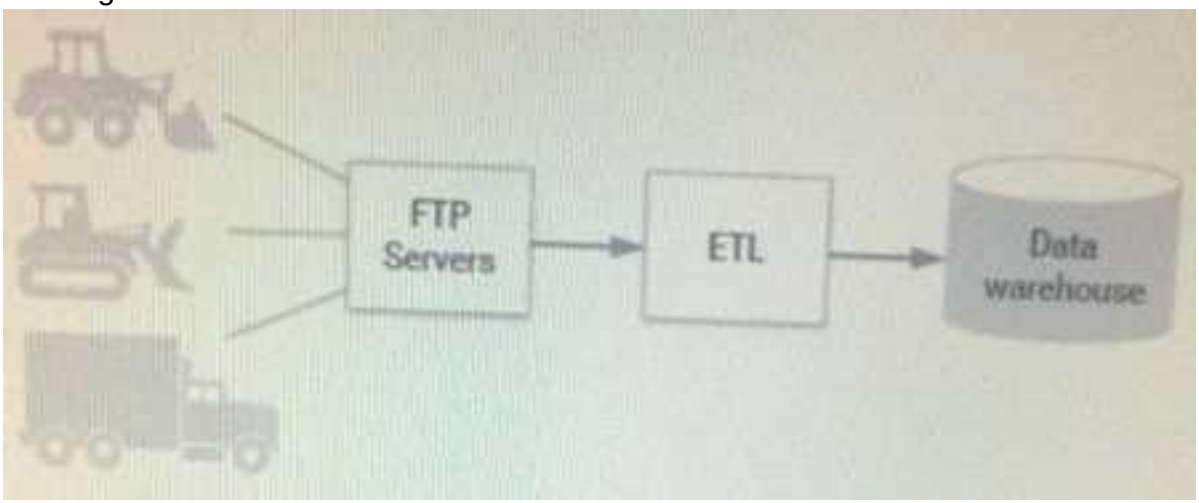
해결방안 :

Increase fleet cellular connectivity to 80%, migrate from FTP to streaming transport, and develop machine learning analysis of metrics.
(셀룰러망 연결을 80퍼까지 늘리고 스트리밍전송으로 마이그레이션을 해야하며 20퍼의 사용자는 FTP대신 클라우드 스토리지를 업로드하여 병목현상 해결.)

NO.62 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



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 business-to create compelling joint offerings for their customers

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.

Which of TerramEarth's legacy enterprise processes will experience significant change as a result of increased Google Cloud Platform adoption.

요구사항 : GCP를 선택함에 따라 어느것 이 크게 변경되는가.

A. Capacity planning, TCO calculations, opex/capex allocation

(TCO 계산 및 운용비용과 자본할당 , 용량계획이 크게 변경됨.)

NO.63 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

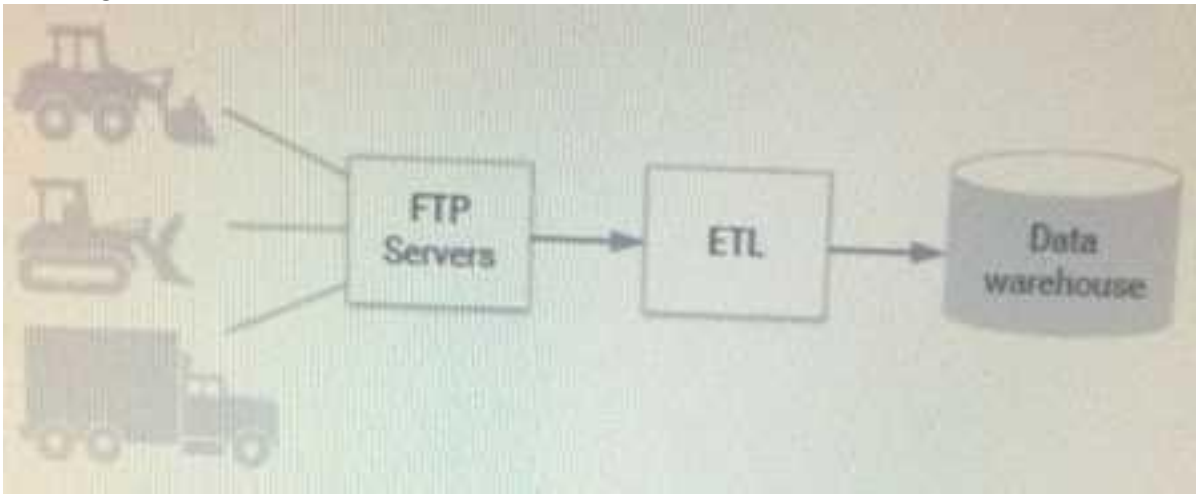
TerramEarth formed in 1946, when several small, family owned companies combined to retool after World War II. The company cares about their employees and customers and considers them to be extended members of their family.

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



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 business-to create compelling joint offerings for their customers
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. To speed up data retrieval, more vehicles will be upgraded to cellular connections and be able to transmit data to the ETL process. The current FTP process is error-prone and restarts the data transfer from the start of the file when connections fail, which happens often. You want to improve the reliability of the solution and minimize data transfer time on the cellular connections. What should you do?

요구사항 : 솔루션의 신뢰성을 향상시키고 셀룰러 연결에서 데이터 전송시간을 최소화 하기위한 수단은? - \

해결방안 :

A. Directly transfer the files to different Google Cloud Multi-Regional Storage bucket locations in us, eu, and asia using Google APIs over HTTP(S). Run the ETL process using the data in the bucket.
(Google API를 이용하여 다른 나라의 Google Cloud Multi-Regional Storage 버킷위치로 직접전송하며, 버킷의 데이터를 사용하여 ETL프로세스를 실행한다.
)

NO.64 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.

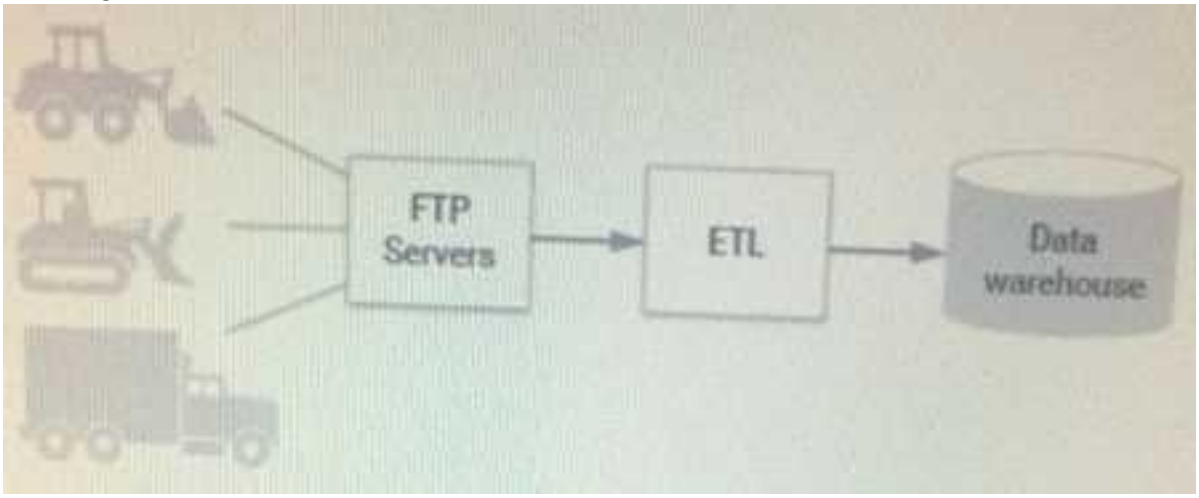
TerramEarth is proud of their ability to innovate on their core products and find new markets as their customers' needs change. For the past 20 years trends in the industry have been largely toward increasing productivity by using larger vehicles with a human operator.

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



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 business-to create compelling joint offerings for their customers 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.
TerramEarth's 20 million vehicles are scattered around the world. Based on the vehicle's location its telemetry data is stored in a Google Cloud Storage (GCS) regional bucket (US. Europe, or Asia). The CTO has asked you to run a report on the raw telemetry data to determine why vehicles are breaking down after 100 K miles. You want to run this job on all the data. What is the most cost-effective way to run this job?

요구사항 : CTO가 100K 마일 후 고장난 이유를 알기 위해 데이터에 원격 측정을 요청하였다. 모든 데이터에 대해 작업을 실행할 시 가장 비효율적인 방법은?

해결방법:

A. Launch a cluster in each region to preprocess and compress the raw data, then move the data into a regional bucket and use a Cloud Dataproc cluster to finish the job.

(원시데이터를 사전 처리하고 압축한 뒤 데이터 버킷으로 이동하는 것이 비효율적.
)

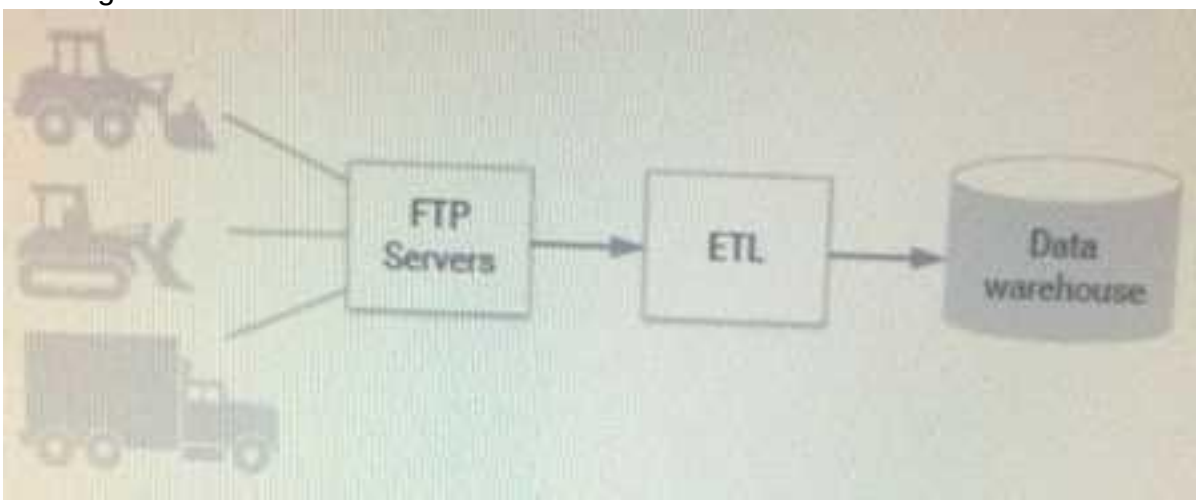
NO.65 Case Study: 2 - TerramEarth Case Study
Company Overview
TerramEarth manufactures heavy equipment for the mining and agricultural industries: About 80% of their business is from mining and 20% from agriculture. They currently have over 500 dealers and service centers in 100 countries. Their mission 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



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 business-to create compelling joint offerings for their customers

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

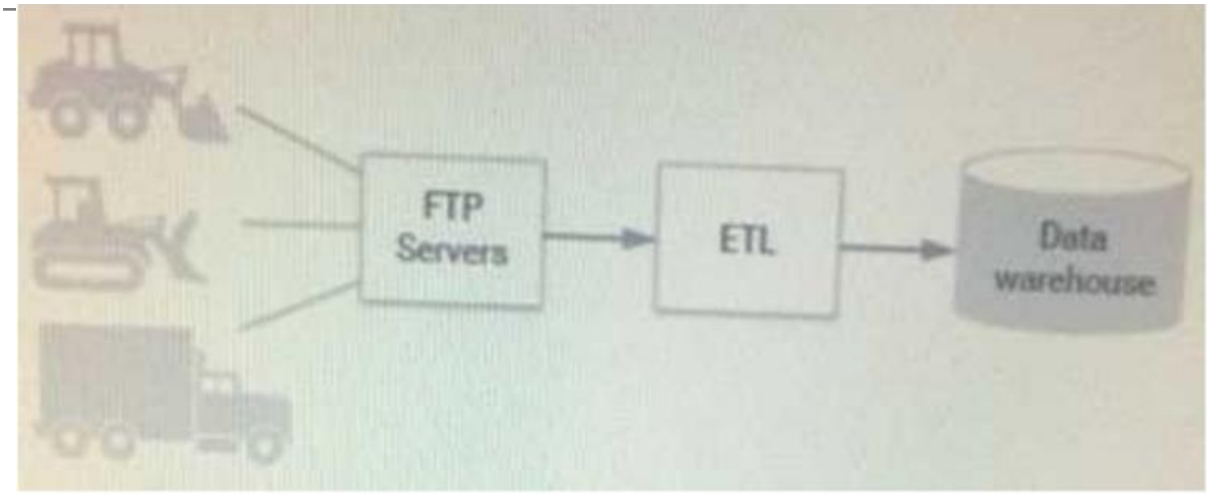
Our competitive advantage has always been in the manufacturing process with our ability to build better vehicles for tower cost than our competitors. However, new products with different approaches are constantly being developed, and I'm concerned that we lack the skills to undergo the next wave of transformations 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. TerramEarth has equipped unconnected trucks with servers and sensors to collet telemetry data. Next year they want to use the data to train machine learning models. They want to store this data in the cloud while reducing costs.
What should they do?
요구사항 : 기계학습을 위한 데이터에 적합한 gcp상품은?

해결방안 :

B. Push the telemetry data in Real-time to a streaming dataflow job that compresses the data, and store it in Google BigQuery.

(실시간의 원격측정 데이터를 데이터를 압축하는 스트리밍 데이터 흐름 작업에 밀어넣어 구글 빅쿼리에 저장한다. 머신러닝은 이 데이터를 다른 DB에서 끌어와 그 데이터에 알고리즘을 적용하는 대신 '빅쿼리'에서 직접 할 수 있는데, 이는 달성 비용이 다른 데이터베이스를 사용하는 것보다 저렴하다.)

NO.66 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



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

(- 잉여 재고 운반 비용 증가 없이 계획되지 않은 차량 가동 중단 시간을 1 주일 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 IP 를 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

Operational parameters such as oil pressure are adjustable on each of TerramEarth's vehicles to increase their efficiency, depending on their environmental conditions. Your primary goal is to increase the operating efficiency of all 20 million cellular and unconnected vehicles in the field How can you accomplish this goal?

요구사항 : TerramEarth 는 광업 및 농업용 중장비를 제조한다. 현재 판매되는 차량은 로컬에 자신의 데이터를 저장하며 약 20 만대의 차량이 셀룰러 네트워크로 TerramEarth 와 직접 통신한다. 하지만 이는 매우 느려 3 주 이전의 데이터를 기반으로 하는 네트워크이다.
이때, 2 천만대의 셀룰러 차량과 비연결 차량의 운영 효율성을 높이는 방법은?

해결방안 :

D. Capture all operating data, train machine learning models that identify ideal operations, and host in Google Cloud Machine Learning (ML) Platform to make operational adjustments automatically.
(모든 운영 데이터를 캡처하고, 이상적인 운영을 식별하는 기계 학습 모델을 교육하며, Google Cloud Machine Learning(ML) 플랫폼에서 호스팅하여 자동으로 운영 조정을 실시한다. 이는 로컬에서 실행하는 것보다 연결성이 좋으며 직접 알고리즘을 작성하는 것보다 빠르다.)

NO.67 Case Study: 3 - JencoMart Case Study
Company Overview
JencoMart is a global retailer with over 10,000 stores in 16 countries. The stores carry a range of goods, such as groceries, tires, and jewelry. One of the company's core values is excellent customer service. In addition, they recently introduced an environmental policy to reduce their carbon output by 50% over the next 5 years.
Company Background
JencoMart started as a general store in 1931, and has grown into one of the world's leading brands known for great value and customer service. Over time, the company transitioned from only physical stores to a stores and online hybrid model, with 25% of sales online. Currently, JencoMart has little presence in Asia, but considers that market key for future growth.
Solution Concept
JencoMart wants to migrate several critical applications to the cloud but has not completed a technical review to determine their suitability for the cloud and the engineering required for migration. They currently host all of these applications on infrastructure that is at its end of life and is no longer supported.
Existing Technical Environment
JencoMart hosts all of its applications in 4 data centers: 3 in North American and 1 in Europe, most applications are dual-homed.
JencoMart understands the dependencies and resource usage metrics of their on-premises architecture.
Application Customer loyalty portal
LAMP (Linux, Apache, MySQL and PHP) application served from the two JencoMart-owned U.S. data centers.
Database
* Oracle Database stores user profiles
B

20 T

Complex table structure
Well maintained, clean data
Strong backup strategy

* PostgreSQL database stores user credentials
-homed in US West

Single

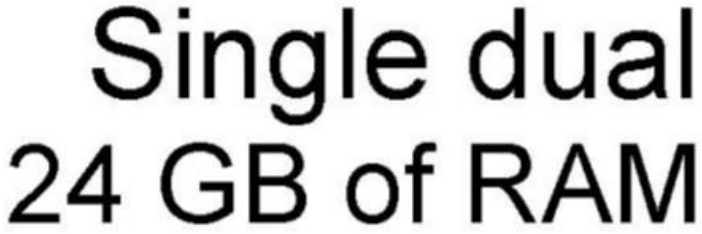
No redundancy
Backed up every 12 hours
100% uptime service level agreement (SLA)

Authenticates all users
Compute
* 30 machines in US West Coast, each machine has:

Twin, dual core CPUs
32GB of RAM

20 machines in US East Coast, each machine has:

-core CPU



B HDD (RAID 1)

Storage

* Access to shared 100 TB SAN in each location
* Tape backup every week

Business Requirements

* Optimize for capacity during peak periods and value during off-peak periods
* Guarantee service availably and support
* Reduce on-premises footprint and associated financial and environmental impact.
* Move to outsourcing model to avoid large upfront costs associated with infrastructure purchase
* Expand services into Asia.

Technical Requirements

* Assess key application for cloud suitability.
* Modify application for the cloud.
* Move applications to a new infrastructure.
* Leverage managed services wherever feasible
* Sunset 20% of capacity in existing data centers
* Decrease latency in Asia

CEO Statement

JencoMart will continue to develop personal relationships with our customers as more people access the web. The future of our retail business is in the global market and the connection between online and in-store experiences. As a large global company, we also have a responsibility to the environment through 'green' initiatives and polices.

CTO Statement

The challenges of operating data centers prevents focus on key technologies critical to our long-term success. Migrating our data services to a public cloud infrastructure will allow us to focus on big data and machine learning to improve our service customers.

CFO Statement

Since its founding JencoMart has invested heavily in our data services infrastructure. However, because of changing market trends, we need to outsource our infrastructure to ensure our long-term success. This model will allow us to respond to increasing customer demand during peak and

For this question, refer to the JencoMart case study.
The JencoMart security team requires that all Google Cloud Platform infrastructure is deployed using a least privilege model with separation of duties for administration between production and development resources. What Google domain and project structure should you recommend?

요구사항 : 젠코마트는 16 개국에 1 만개 이상의 점포를 보유한 글로벌 유통업체다.
젠코마트 보안팀은 모든 구글 클라우드 플랫폼 인프라가 생산과 개발 자원 간 관리를 위한 업무 분리가 가능한 최소한의 특권 모델을 사용하여 구축될 것을 요구하고 있다. 이때 사용할 구글 도메인과 프로젝트 구조는?

해결방안 :

D. Create a single G Suite account to manage users with one project for the development/test/staging environment and one project for the production environment.
(단일 G Suite 계정을 생성하여 개발/테스트/스테이지 환경에 대한 하나의 프로젝트와 프로덕션 환경에 대한 하나의 프로젝트로 사용자를 관리하십시오.)

NO.68 Case Study: 3 - JencoMart Case Study
Company Overview
JencoMart is a global retailer with over 10,000 stores in 16 countries. The stores carry a range of goods, such as groceries, tires, and jewelry. One of the company's core values is excellent customer service. In addition, they recently introduced an environmental policy to reduce their carbon output by 50% over the next 5 years.
Company Background
JencoMart started as a general store in 1931, and has grown into one of the world's leading brands known for great value and customer service. Over time, the company transitioned from only physical stores to a stores and online hybrid model, with 25% of sales online. Currently, JencoMart has little presence in Asia, but considers that market key for future growth.
Solution Concept
JencoMart wants to migrate several critical applications to the cloud but has not completed a technical review to determine their suitability for the cloud and the engineering required for migration. They currently host all of these applications on infrastructure that is at its end of life and is no longer supported.
Existing Technical Environment
JencoMart hosts all of its applications in 4 data centers: 3 in North American and 1 in Europe, most applications are dual-homed.
JencoMart understands the dependencies and resource usage metrics of their on-premises architecture.
Application Customer loyalty portal
LAMP (Linux, Apache, MySQL and PHP) application served from the two JencoMart-owned U.S. data centers.
Database
* Oracle Database stores user profiles
B

20 T

Complex table structure
Well maintained, clean data
Strong backup strategy

* PostgreSQL database stores user credentials
-homed in US West

Single

No redundancy
Backed up every 12 hours
100% uptime service level agreement (SLA)

Authenticates all users
Compute
* 30 machines in US West Coast, each machine has:

Twin, dual core CPUs
32GB of RAM

Twin 250 GB HDD (RAID 1)

20 machines in US East Coast, each machine has:

-core CPU

Single dual

24 GB of RAM

B HDD (RAID 1)

Twin 250 G

Storage

* Access to shared 100 TB SAN in each location
* Tape backup every week

Business Requirements

* Optimize for capacity during peak periods and value during off-peak periods
* Guarantee service availably and support
* Reduce on-premises footprint and associated financial and environmental impact.
* Move to outsourcing model to avoid large upfront costs associated with infrastructure purchase
* Expand services into Asia.

Technical Requirements

* Assess key application for cloud suitability.
* Modify application for the cloud.
* Move applications to a new infrastructure.
* Leverage managed services wherever feasible
* Sunset 20% of capacity in existing data centers
* Decrease latency in Asia

CEO Statement

JencoMart will continue to develop personal relationships with our customers as more people access the web. The future of our retail business is in the global market and the connection between online and in-store experiences. As a large global company, we also have a responsibility to the environment through 'green' initiatives and polices.

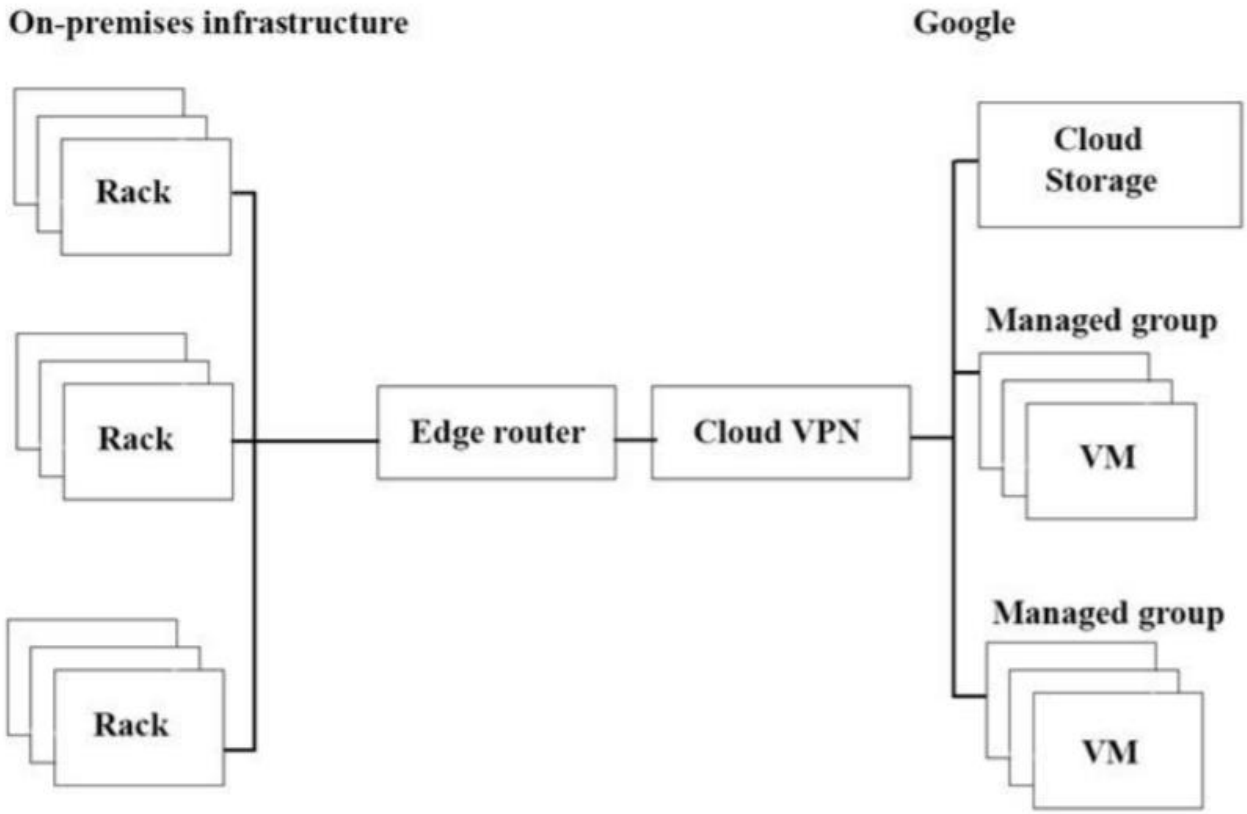
CTO Statement

The challenges of operating data centers prevents focus on key technologies critical to our long-term success. Migrating our data services to a public cloud infrastructure will allow us to focus on big data and machine learning to improve our service customers.

CFO Statement

Since its founding JencoMart has invested heavily in our data services infrastructure. However, because of changing market trends, we need to outsource our infrastructure to ensure our long-term success. This model will allow us to respond to increasing customer demand during peak and

For this question, refer to the JencoMart case study.
The migration of JencoMart's application to Google Cloud Platform (GCP) is progressing too slowly. The infrastructure is shown in the diagram.
You want to maximize throughput.
What are three potential bottlenecks? (Choose 3 answers.)



요구사항 : 젠코마트는 16 개국에 1 만개 이상의 점포를 보유한 글로벌 유통업체다.
위의 인프라 다이어그램을 봤을 때, 병목 현상의 3 가지 원인은?

해결방안 :

A. A single VPN tunnel, which limits throughput
(처리량을 제한하는 단일 VPN 터널)

C. A copy command that is not suited to operate over long distances
(장거리 운용에 적합하지 않은 복사 명령)

E. A separate storage layer outside the VMs, which is not suited for this task
(VM 외부의 별도의 스토리지 계층으로, 이 작업에 적합하지 않음)

NO.69 Case Study: 3 - JencoMart Case Study

Company Overview

JencoMart is a global retailer with over 10,000 stores in 16 countries. The stores carry a range of goods, such as groceries, tires, and jewelry. One of the company's core values is excellent customer service. In addition, they recently introduced an environmental policy to reduce their carbon output by 50% over the next 5 years.

Company Background

JencoMart started as a general store in 1931, and has grown into one of the world's leading brands known for great value and customer service. Over time, the company transitioned from only physical stores to a stores and online hybrid model, with 25% of sales online. Currently, JencoMart has little presence in Asia, but considers that market key for future growth.

Solution Concept

JencoMart wants to migrate several critical applications to the cloud but has not completed a technical review to determine their suitability for the cloud and the engineering required for migration. They currently host all of these applications on infrastructure that is at its end of life and is no longer supported.

Existing Technical Environment

JencoMart hosts all of its applications in 4 data centers: 3 in North American and 1 in Europe, most applications are dual-homed.

JencoMart understands the dependencies and resource usage metrics of their on-premises architecture.

Application Customer loyalty portal

LAMP (Linux, Apache, MySQL and PHP) application served from the two JencoMart-owned U.S. data centers.

Database

* Oracle Database stores user profiles

B

* PostgreSQL database stores user credentials

-homed in US West

Single

No redundancy

Backed up every 12 hours

100% uptime service level agreement (SLA)

Authenticates all users

Compute

* 30 machines in US West Coast, each machine has:

Twin, dual core CPUs

32GB of RAM

Twin 250 GB HDD (RAID 1)

20 machines in US East Coast, each machine has:

-core CPU

Single dual

24 GB of RAM

B HDD (RAID 1)

Twin 250 G

Storage

* Access to shared 100 TB SAN in each location
* Tape backup every week

Business Requirements

* Optimize for capacity during peak periods and value during off-peak periods
* Guarantee service availably and support
* Reduce on-premises footprint and associated financial and environmental impact.
* Move to outsourcing model to avoid large upfront costs associated with infrastructure purchase

Technical Requirements
* Assess key application for cloud suitability.
* Modify application for the cloud.
* Move applications to a new infrastructure.
* Leverage managed services wherever feasible
* Sunset 20% of capacity in existing data centers
* Decrease latency in Asia

CEO Statement
JencoMart will continue to develop personal relationships with our customers as more people access the web. The future of our retail business is in the global market and the connection between online and in-store experiences. As a large global company, we also have a responsibility to the environment through 'green' initiatives and polices.

CTO Statement
The challenges of operating data centers prevents focus on key technologies critical to our long-term success. Migrating our data services to a public cloud infrastructure will allow us to focus on big data and machine learning to improve our service customers.

CFO Statement
Since its founding JencoMart has invested heavily in our data services infrastructure. However, because of changing market trends, we need to outsource our infrastructure to ensure our long-term success. This model will allow us to respond to increasing customer demand during peak and reduce costs.

For this question, refer to the JencoMart case study
A few days after JencoMart migrates the user credentials database to Google Cloud Platform and shuts down the old server, the new database server stops responding to SSH connections. It is still serving database requests to the application servers correctly. What three steps should you take to diagnose the problem? Choose 3 answers

요구사항 : 사용자 자격 증명 데이터베이스 서버가 SSH 연결에 대한 응답을 중지할 때, 문제를 진단하기 위해 어떤 세 단계를 밟아야 하는가?

해결방안 :

C. Take a snapshot of the disk and connect to a new machine to investigate.
(디스크의 스냅샷을 찍고 새 컴퓨터에 연결하여 조사한다.)

D. Check inbound firewall rules for the network the machine is connected to.
(기계가 연결된 네트워크에 대한 인바운드 방화벽 규칙을 확인한다. 22 이외의 포트에서 sshd 를 실행하는 경우 사용자 지정 방화벽 규칙을 사용하여 해당 포트에 액세스할 수 있도록 설정해야 한다.)

F. Print the Serial Console output for the instance for troubleshooting, activate the interactive console, and investigate.
(문제 해결을 위해 인스턴스에 대한 직렬 콘솔 출력을 인쇄하고 CLI 환경에서 조사한다. 직렬 콘솔 출력 페이지로 이동하여 메타데이터로부터 접두사 검색을 통해 데몬이 실행 중인지 확인할 수 있다.)

NO.70 Case Study: 3 - JencoMart Case Study

Company Overview

JencoMart is a global retailer with over 10,000 stores in 16 countries. The stores carry a range of goods, such as groceries, tires, and jewelry. One of the company's core values is excellent customer service. In addition, they recently introduced an environmental policy to reduce their carbon output by 50% over the next 5 years.

Company Background

JencoMart started as a general store in 1931, and has grown into one of the world's leading brands known for great value and customer service. Over time, the company transitioned from only physical stores to a stores and online hybrid model, with 25% of sales online. Currently, JencoMart has little presence in Asia, but considers that market key for future growth.

Solution Concept

JencoMart wants to migrate several critical applications to the cloud but has not completed a technical review to determine their suitability for the cloud and the engineering required for migration. They currently host all of these applications on infrastructure that is at its end of life and is no longer supported.

Existing Technical Environment

JencoMart hosts all of its applications in 4 data centers: 3 in North American and 1 in Europe, most applications are dual-homed.

JencoMart understands the dependencies and resource usage metrics of their on-premises architecture.

Application Customer loyalty portal

LAMP (Linux, Apache, MySQL and PHP) application served from the two JencoMart-owned U.S. data centers.

Database

* Oracle Database stores user profiles

B

20 T

Complex table structure

Well maintained, clean data

Strong backup strategy

* PostgreSQL database stores user credentials

-homed in US West

Single

No redundancy

Backed up every 12 hours

100% uptime service level agreement (SLA)

Authenticates all users

Compute

* 30 machines in US West Coast, each machine has:

Twin, dual core CPUs

32GB of RAM

Twin 250 GB HDD (RAID 1)

20 machines in US East Coast, each machine has:

-core CPU

Single dual

24 GB of RAM

B HDD (RAID 1)

Twin 250 G

Storage

* Access to shared 100 TB SAN in each location
* Tape backup every week

Business Requirements

* Optimize for capacity during peak periods and value during off-peak periods
* Guarantee service availably and support
* Reduce on-premises footprint and associated financial and environmental impact.
* Move to outsourcing model to avoid large upfront costs associated with infrastructure purchase

Technical Requirements
* Assess key application for cloud suitability.
* Modify application for the cloud.
* Move applications to a new infrastructure.
* Leverage managed services wherever feasible
* Sunset 20% of capacity in existing data centers
* Decrease latency in Asia

CEO Statement
JencoMart will continue to develop personal relationships with our customers as more people access the web. The future of our retail business is in the global market and the connection between online and in-store experiences. As a large global company, we also have a responsibility to the environment through 'green' initiatives and polices.

CTO Statement
The challenges of operating data centers prevents focus on key technologies critical to our long-term success. Migrating our data services to a public cloud infrastructure will allow us to focus on big data and machine learning to improve our service customers.

CFO Statement
Since its founding JencoMart has invested heavily in our data services infrastructure. However, because of changing market trends, we need to outsource our infrastructure to ensure our long-term success. This model will allow us to respond to increasing customer demand during peak and reduce costs.

For this question, refer to the JencoMart case study.
JencoMart wants to move their User Profiles database to Google Cloud Platform. Which Google Database should they use?

요구사항 : 큰 크기의 대용량 데이터를 저장할 수 있은 google 데이터 베이스는?

해결방안 :

D. Google Cloud Datastore

NO.71 Case Study: 3 - JencoMart Case Study

Company Overview
JencoMart is a global retailer with over 10,000 stores in 16 countries. The stores carry a range of goods, such as groceries, tires, and jewelry. One of the company's core values is excellent customer service. In addition, they recently introduced an environmental policy to reduce their carbon output by 50% over the next 5 years.

Company Background
JencoMart started as a general store in 1931, and has grown into one of the world's leading brands known for great value and customer service. Over time, the company transitioned from only physical stores to a stores and online hybrid model, with 25% of sales online. Currently, JencoMart has little presence in Asia, but considers that market key for future growth.

Solution Concept
JencoMart wants to migrate several critical applications to the cloud but has not completed a technical review to determine their suitability for the cloud and the engineering required for migration. They currently host all of these applications on infrastructure that is at its end of life and is

no longer supported.

Existing Technical Environment

JencoMart hosts all of its applications in 4 data centers: 3 in North American and 1 in Europe, most applications are dual-homed.

JencoMart understands the dependencies and resource usage metrics of their on-premises architecture.

Application Customer loyalty portal

LAMP (Linux, Apache, MySQL and PHP) application served from the two JencoMart-owned U.S. data centers.

Database

* Oracle Database stores user profiles

* PostgreSQL database stores user credentials

-homed in US West

70

IT Certification Guaranteed, The Easy Way!

service level agreement (SLA)

Authenticates all users
Compute
* 30 machines in US West Coast, each machine has:

* 20 machines in US East Coast, each machine has:
-core CPU

Storage

Tape backup every week
Business Requirements

* Access to shared 100 TB SAN in each location *

* Optimize for capacity during peak periods and value during off-peak periods
* Guarantee service availably and support
* Reduce on-premises footprint and associated financial and environmental impact. * Move to outsourcing model to avoid large upfront costs associated with infrastructure purchase * Expand services into Asia.
Technical Requirements
* Assess key application for cloud suitability.
* Modify application for the cloud.
* Move applications to a new infrastructure.
* Leverage managed services wherever feasible
* Sunset 20% of capacity in existing data centers

CEO Statement

JencoMart will continue to develop personal relationships with our customers as more people access the web. The future of our retail business is in the global market and the connection between online and in-store experiences. As a large global company, we also have a responsibility to the environment through 'green' initiatives and polices.

CTO Statement

The challenges of operating data centers prevents focus on key technologies critical to our long-term success. Migrating our data services to a public cloud infrastructure will allow us to focus on big data and machine learning to improve our service customers.

(데이터 서비스를 퍼블릭 클라우드 인프라로 옮기면 빅데이터 및 머신러닝에 집중하여 서비스 고객을 개선할 수 있을 것이다.)

CFO Statement

Since its founding JencoMart has invested heavily in our data services infrastructure. However, because of changing market trends, we need to outsource our infrastructure to ensure our long-term success. This model will allow us to respond to increasing customer demand during peak and reduce costs.

For this question, refer to the JencoMart case study.

JencoMart has decided to migrate user profile storage to Google Cloud Datastore and the application servers to Google Compute Engine (GCE). During the migration, the existing infrastructure will need access to Datastore to upload the data. What service account key-management strategy should you recommend?

(젠코마트가 사용자 프로필 스토리지를 구글 클라우드 데이터 저장소로, 애플리케이션 서버를 구글 컴퓨팅 엔진(GCE)으로 옮기기로 했다. 옮기는 중에 데이터를 업로드하려면 기존 인프라가 데이터스토어에 액세스해야 하는데, 어떤 서비스 계정 키 관리 방법을 추천하시겠습니까?)

A. Provision service account keys for the on-premises infrastructure and for the GCE virtual machines (VMs).

B. Authenticate the on-premises infrastructure with a user account and provision service account keys for the VMs.

C. Provision service account keys for the on-premises infrastructure and use Google Cloud Platform (GCP) managed keys for the VMs

D. Deploy a custom authentication service on GCE/Google Container Engine (GKE) for the on premises infrastructure and use GCP managed keys for the VMs.

Answer: A

Explanation:

A) (correct answer) This addresses both of data migration and application server migration properly. "Provision service account keys for the on-premises infrastructure": For code running on systems outside Google, you cannot use GCP-managed keys. You need to create Service account for it and provision User-managed keys. These keys are created, downloadable, and managed by users - This is solution for on-premises access to GCP datastore during migration

"use Google Cloud Platform (GCP) managed keys for the VMs" - this is solution for Application server migration since there is no external access to GCP is required during the migration.

(이것은 데이터 이주와 애플리케이션 서버 이주 모두를 적절하게 처리한다.

"사내 인프라를 위한 서비스 계정 키 프로비저닝": 구글 외부 시스템에서 실행되는 코드의 경우 GCP

관리 키를 사용할 수 없다. 따라서 이에 대한 서비스 계정을 생성하고 사용자 관리 키를 공급해야 한다. 이러한 키는 사용자가 생성, 다운로드 및 관리 - 마이그레이션 중에 "VM 용 GCP(Google Cloud Platform) 관리 키를 사용"하는 사내 GCP 데이터 저장소 액세스를 위한 솔루션이며, 이주 중에는 GCP 에 대한 외부 액세스가 필요하지 않으므로 애플리케이션 서버 이주를 위한 솔루션이다.)

Answer B is incorrect: First, the applications running on-premises to access GCP Datastore assume the identity of the service account to call Google APIs, so that the users aren't directly involved. Secondly, for the application server migration to GCP VMs, you can use GCP managed keys for the VMs. It's simple and effective. There is no need to provision and manage keys (User- managed keys) by yourself for the VMs.
GCP-managed keys are used by Cloud Platform services such as App Engine and Compute Engine. These keys cannot be downloaded. Google will keep the keys and automatically rotate them on an approximately weekly basis.
C) is incorrect in the solution for on-premises access to GCP Datastore - This is possible options that might require more setup than worthwhile for the requirements.
D) is incorrect for reason of application server migration: you can use GCP managed keys for the VMs. It's simple and effective. There is no need to provision and manage keys (User-managed keys) by yourself for the application VMs

NO.72 Case Study: 3 - JencoMart Case Study
Company Overview
JencoMart is a global retailer with over 10,000 stores in 16 countries. The stores carry a range of goods, such as groceries, tires, and jewelry. One of the company's core values is excellent customer service. In addition, they recently introduced an environmental policy to reduce their carbon output by 50% over the next 5 years.
Company Background
JencoMart started as a general store in 1931, and has grown into one of the world's leading brands known for great value and customer service. Over time, the company transitioned from only physical stores to a stores and online hybrid model, with 25% of sales online. Currently, JencoMart has little presence in Asia, but considers that market key for future growth.
Solution Concept
JencoMart wants to migrate several critical applications to the cloud but has not completed a technical review to determine their suitability for the cloud and the engineering required for migration. They currently host all of these applications on infrastructure that is at its end of life and is no longer supported.
Existing Technical Environment
JencoMart hosts all of its applications in 4 data centers: 3 in North American and 1 in Europe, most applications are dual-homed.
JencoMart understands the dependencies and resource usage metrics of their on-premises architecture.
Application Customer loyalty portal
LAMP (Linux, Apache, MySQL and PHP) application served from the two JencoMart-owned U.S. data centers.
Database
* Oracle Database stores user profiles

IT Certification Guaranteed, The Easy Way!

structure

* PostgreSQL database stores user credentials
-homed in US West

Authenticates all users

Compute
* 30 machines in US West Coast, each machine has:

* 20 machines in US East Coast, each machine has:
-core CPU

Storage
* Access to shared 100 TB SAN in each location
* Tape backup every week
Business Requirements
* Optimize for capacity during peak periods and value during off-peak periods
* Guarantee service availably and support
* Reduce on-premises footprint and associated financial and environmental impact. * Move to outsourcing model to avoid large upfront costs associated with infrastructure purchase * Expand services into Asia.
* 피크 기간 동안의 용량 및 오프피크 기간 동안의 가치에 맞게 최적화
* 서비스 가용성 및 지원 보장
* 사내 설치 공간 및 관련 재무 및 환경 영향 감소
* 아웃소싱 모델로 전환하여 인프라 구매와 관련된 막대한 초기 비용 방지
* 아시아로 서비스 확장
Technical Requirements
* Assess key application for cloud suitability.
* Modify application for the cloud.
* Move applications to a new infrastructure.
* Leverage managed services wherever feasible
* Sunset 20% of capacity in existing data centers
* Decrease latency in Asia
* 클라우드 적합성에 대한 주요 애플리케이션 평가
* 클라우드에 대한 애플리케이션 수정
* 애플리케이션을 새로운 인프라로 이동
* 가능한 경우 관리되는 서비스 활용
* 기존 데이터 센터에서 용량의 20% 선셋
* 아시아에서 대기 시간 단축
CEO Statement
JencoMart will continue to develop personal relationships with our customers as more people access the web. The future of our retail business is in the global market and the connection between online

and in-store experiences. As a large global company, we also have a responsibility to the environment through 'green' initiatives and polices.

CTO Statement

The challenges of operating data centers prevents focus on key technologies critical to our long-term success. Migrating our data services to a public cloud infrastructure will allow us to focus on big data and machine learning to improve our service customers.

CFO Statement

Since its founding JencoMart has invested heavily in our data services infrastructure. However, because of changing market trends, we need to outsource our infrastructure to ensure our long-term success. This model will allow us to respond to increasing customer demand during peak and reduce costs.

For this question, refer to the JencoMart case study.

JencoMart has built a version of their application on Google Cloud Platform that serves traffic to Asia. You want to measure success against their business and technical goals. Which metrics should you

track?

A. Error rates for requests from Asia

B. Latency difference between US and Asia

C. Total visits, error rates, and latency from Asia

D. Total visits and average latency for users in Asia

(아시아 사용자의 총 방문 수 및 평균 지연 시간)

E. The number of character sets present in the database ***Answer:*** D

Explanation:

From scenario:

Business Requirements include: Expand services into Asia

Technical Requirements include: Decrease latency in Asia

(비즈니스 요구사항: 아시아로 서비스 확장

기술 요구사항 : 아시아에서 대기 시간 단축)

NO.73 Case Study: 4 - Dress4Win case study

Company Overview

Dress4win is a web-based company that helps their users organize and manage their personal wardrobe using a website and mobile application. The company also cultivates an active social network that connects their users with designers and retailers. They monetize their services through advertising, e-commerce, referrals, and a freemium app model.
Company Background
Dress4win's application has grown from a few servers in the founder's garage to several hundred servers and appliances in a colocated data center. However, the capacity of their infrastructure is now insufficient for the application's rapid growth. Because of this growth and the company's desire to innovate faster, Dress4win is committing to a full migration to a public cloud. Solution Concept
For the first phase of their migration to the cloud, Dress4win is considering moving their development and test environments. They are also considering building a disaster recovery site, because their current infrastructure is at a single location. They are not sure which components of their architecture they can migrate as is and which components they need to change before migrating them.
Existing Technical Environment
The Dress4win application is served out of a single data center location.
Databases:
MySQL - user data, inventory, static data

Redis - metadata, social graph, caching

Application servers:
Tomcat - Java micro-services

Nginx - static content

Apache Beam - Batch processing

Storage appliances:
iSCSI for VM hosts

Fiber channel SAN - MySQL databases

NAS - image storage, logs, backups

76

Social notifications

Events

Apache Hadoop/Spark servers:
Data analysis

Miscellaneous servers:
Jenkins, monitoring, bastion hosts, security scanners

Real-time trending calculations

MQ servers:
Messaging

Business Requirements

IT Certification Guaranteed, The Easy Way!

Build a reliable and reproducible environment with scaled parity of production. Improve security by defining and adhering to a set of security and Identity and Access Management (IAM) best practices for cloud.
Improve business agility and speed of innovation through rapid provisioning of new resources.
Analyze and optimize architecture for performance in the cloud. Migrate fully to the cloud if all other requirements are met.
Technical Requirements
Evaluate and choose an automation framework for provisioning resources in cloud. Support failover of the production environment to cloud during an emergency. Identify production services that can migrate to cloud to save capacity.
Use managed services whenever possible.
Encrypt data on the wire and at rest.
Support multiple VPN connections between the production data center and cloud environment. CEO Statement
Our investors are concerned about our ability to scale and contain costs with our current infrastructure. They are also concerned that a new competitor could use a public cloud platform to offset their up-front investment and freeing them to focus on developing better features. CTO Statement
We have invested heavily in the current infrastructure, but much of the equipment is approaching

the end of its useful life. We are consistently waiting weeks for new gear to be racked before we can start new projects. Our traffic patterns are highest in the mornings and weekend evenings; during other times, 80% of our capacity is sitting idle.

CFO Statement

Our capital expenditure is now exceeding our quarterly projections. Migrating to the cloud will likely cause an initial increase in spending, but we expect to fully transition before our next hardware refresh cycle. Our total cost of ownership (TCO) analysis over the next 5 years puts a cloud strategy between 30 to 50% lower than our current model.

For this question, refer to the Dress4Win case study.

At Dress4Win, an operations engineer wants to create a tow-cost solution to remotely archive copies of database backup files. The database files are compressed tar files stored in their current data center.

How should he proceed?

(드레스 4 운영 엔지니어가 데이터베이스 백업 파일의 복사본을 원격으로 보관할 수 있는 견인 비용 솔루션을 개발하고자 하는 경우, 데이터베이스 파일은 현재 데이터 센터에 있는 저장된 압축 tar 파일이다. 그는 어떻게 진행해야 할까?)

A. Create a cron script using gsutil to copy the files to a Coldline Storage

bucket.

(gsutil 을 사용하여 파일을 Coldline 스토리지 버킷에 복사하는 cron 스크립트

생성) 77

IT Certification Guaranteed, The Easy Way!

B. Create a cron script using gsutil to copy the files to a Regional Storage bucket. **C.** Create a Cloud Storage Transfer Service Job to copy the files to a Coldline Storage bucket. **D.** Create a Cloud Storage Transfer Service job to copy the files to a Regional Storage bucket. ***Answer:***

A

Explanation:

Follow these rules of thumb when deciding whether to use gsutil or Storage Transfer Service: When transferring data from an on-premises location, use gsutil.

When transferring data from another cloud storage provider, use Storage Transfer Service. Otherwise, evaluate both tools with respect to your specific scenario.

Use this guidance as a starting point. The specific details of your transfer scenario will also help you determine which tool is more appropriate

(gsutil 또는 Storage Transfer Service 를 사용할지 여부를 결정할 때는 다음 경험 규칙을 따라주십시오.

사내 위치에서 데이터를 전송할 때는 gsutil 을 사용하십시오.

다른 클라우드 스토리지 제공자에서 데이터를 전송할 때는 스토리지 전송 서비스를 사용하십시오.

그렇지 않으면 특정 시나리오와 관련하여 두 도구를 모두 평가하십시오.

이 지침을 시작점으로 사용하십시오. 또한 전송 시나리오의 구체적인 세부 정보는 어떤 도구가 더 적합한지 결정하는 데 도움이 될 것입니다.)

NO.74 Case Study: 4 - Dress4Win case study

Company Overview

Dress4win is a web-based company that helps their users organize and manage their personal wardrobe using a website and mobile application. The company also cultivates an active social network that connects their users with designers and retailers. They monetize their services through advertising, e-commerce, referrals, and a freemium app model.

Company Background

Dress4win's application has grown from a few servers in the founder's garage to several hundred servers and appliances in a colocated data center. However, the capacity of their infrastructure is now insufficient for the application's rapid growth. Because of this growth and the company's desire to innovate faster, Dress4win is committing to a full migration to a public cloud. Solution Concept

For the first phase of their migration to the cloud, Dress4win is considering moving their development and test environments. They are also considering building a disaster recovery site, because their current infrastructure is at a single location. They are not sure which components of their architecture they can migrate as is and which components they need to change before migrating them.

Existing Technical Environment

The Dress4win application is served out of a single data center location.

Databases:

MySQL - user data, inventory, static data

Redis - metadata, social graph, caching

Application servers:

Tomcat - Java micro-services

Nginx - static content

Apache Beam - Batch processing

Storage appliances:

iSCSI for VM hosts

Fiber channel SAN - MySQL databases

NAS - image storage, logs, backups

Apache Hadoop/Spark servers:

MQ servers:

Messaging

Data analysis

Social notifications

Real-time trending calculations

Events

Business Requirements

Miscellaneous servers:
Jenkins, monitoring, bastion hosts, security

Build a reliable and reproducible environment with scaled parity of production. Improve security by defining and adhering to a set of security and Identity and Access Management (IAM) best practices for cloud.
Improve business agility and speed of innovation through rapid provisioning of new resources.
Analyze and optimize architecture for performance in the cloud. Migrate fully to the cloud if all other requirements are met.
(모든 요구 사항이 충족.)
Technical Requirements
Evaluate and choose an automation framework for provisioning resources in cloud. Support failover of the production environment to cloud during an emergency. Identify production services that can migrate to cloud to save capacity.
Use managed services whenever possible.
Encrypt data on the wire and at rest.
Support multiple VPN connections between the production data center and cloud environment. CEO Statement
Our investors are concerned about our ability to scale and contain costs with our current infrastructure. They are also concerned that a new competitor could use a public cloud platform to offset their up-front investment and freeing them to focus on developing better features. CTO Statement
We have invested heavily in the current infrastructure, but much of the equipment is approaching the end of its useful life. We are consistently waiting weeks for new gear to be racked before we can start new projects. Our traffic patterns are highest in the mornings and weekend evenings; during other times, 80% of our capacity is sitting idle.
CFO Statement
Our capital expenditure is now exceeding our quarterly projections. Migrating to the cloud will likely cause an initial increase in spending, but we expect to fully transition before our next hardware refresh cycle. Our total cost of ownership (TCO) analysis over the next 5 years puts a cloud strategy between 30 to 50% lower than our current model.
For this question, refer to the Dress4Win case study.
Dress4Win has asked you to recommend machine types they should deploy their application servers to. How should you proceed?

(드레스 4Win 이 애플리케이션 서버를 배치할 컴퓨터 유형을 추천해 달라고 부탁했다. 어떻게 진행하면 좋을까?)

A. Perform a mapping of the on-premises physical hardware cores and RAM to the nearest machine types in the cloud.

B. Recommend that Dress4Win deploy application servers to machine types that offer the highest RAM to CPU ratio available.

C. Recommend that Dress4Win deploy into production with the smallest instances available, monitor them over time, and scale the machine type up until the desired performance is reached.

D. Identify the number of virtual cores and RAM associated with the application server virtual machines align them to a custom machine type in the cloud, monitor performance, and scale the machine types up until the desired performance is reached.

(애플리케이션 서버 가상 시스템과 연결된 가상 코어 및 RAM 수를 식별하여 클라우드의 사용자 지정 시스템 유형에 맞추고 성능을 모니터링한 후 원하는 성능에 도달할 때까지 시스템 유형을 확장할 것.**)**

Answer: D

NO.75 Case Study: 4 - Dress4Win case study

Company Overview

Dress4win is a web-based company that helps their users organize and manage their personal wardrobe using a website and mobile application. The company also cultivates an active social network that connects their users with designers and retailers. They monetize their services through advertising, e-commerce, referrals, and a freemium app model. Company Background

Dress4win's application has grown from a few servers in the founder's garage to several hundred servers and appliances in a colocated data center. However, the capacity of their infrastructure is now insufficient for the application's rapid growth. Because of this growth and the company's desire to innovate faster, Dress4win is committing to a full migration to a public cloud. Solution Concept

For the first phase of their migration to the cloud, Dress4win is considering moving their development and test environments. They are also considering building a disaster recovery site, because their current infrastructure is at a single location. They are not sure which components of their architecture they can migrate as is and which components they need to change before migrating them.

Existing Technical Environment

The Dress4win application is served out of a single data center location.

Databases:

MySQL - user data, inventory, static data

Redis - metadata, social graph, caching

Application servers:

Tomcat - Java micro-services

Nginx - static content

Apache Beam - Batch processing

Storage appliances:

iSCSI for VM hosts

Fiber channel SAN - MySQL databases

NAS - image storage, logs, backups

Apache Hadoop/Spark servers:

Data analysis

Real-time trending calculations

MQ servers:

Messaging

Social notifications

- Events
- Miscellaneous servers:

Jenkins, monitoring, bastion hosts, security

- scanners Business Requirements

Build a reliable and reproducible environment with scaled parity of production. Improve security by defining and adhering to a set of security and Identity and Access Management (IAM) best practices for cloud.
Improve business agility and speed of innovation through rapid provisioning of new resources.
Analyze and optimize architecture for performance in the cloud. Migrate fully to the cloud if all other requirements are met.
Technical Requirements
Evaluate and choose an automation framework for provisioning resources in cloud. Support failover of the production environment to cloud during an emergency. Identify production services that can migrate to cloud to save capacity.
Use managed services whenever possible.
Encrypt data on the wire and at rest.
Support multiple VPN connections between the production data center and cloud environment. CEO Statement
Our investors are concerned about our ability to scale and contain costs with our current infrastructure. They are also concerned that a new competitor could use a public cloud platform to offset their up-front investment and freeing them to focus on developing better features. CTO Statement
We have invested heavily in the current infrastructure, but much of the equipment is approaching the end of its useful life. We are consistently waiting weeks for new gear to be racked before we can start new projects. Our traffic patterns are highest in the mornings and weekend evenings; during other times, 80% of our capacity is sitting idle.
CFO Statement
Our capital expenditure is now exceeding our quarterly projections. Migrating to the cloud will likely cause an initial increase in spending, but we expect to fully transition before our next hardware refresh cycle. Our total cost of ownership (TCO) analysis over the next 5 years puts a cloud strategy between 30 to 50% lower than our current model.
For this question, refer to the Dress4Win case study.
Dress4Win has asked you for advice on how to migrate their on-premises MySQL deployment to the cloud. They want to minimize downtime and performance impact to their on-premises solution during the migration. Which approach should you recommend?
(드레스 4Win 은 사내 MySQL 배포를 클라우드로 마이그레이션하는 방법에 대한 조언을 구했다. 마이그레이션 중에 사내 솔루션에 미치는 다운타임 및 성능 영향을 최소화하고자 하는 고객 어떤 방법을 추천하시겠습니까?)

A. Create a dump of the on-premises MySQL master server, and then shut it down, upload it to the cloud environment, and load into a new MySQL cluster.

B. Setup a MySQL replica server/slave in the cloud environment, and configure it for asynchronous replication from the MySQL master server on-premises until cutover.
(클라우드 환경에서 MySQL 복제본 서버/슬레이브를 설정하고 컷오버될 때까지 사내 MySQL 마스터 서버에서 비동기 복제를 위해 구성하십시오.)

C. Create a new MySQL cluster in the cloud, configure applications to begin writing to both on-premises and cloud MySQL masters, and destroy the original cluster at cutover.

D. Create a dump of the MySQL replica server into the cloud environment, load it into: Google Cloud Datastore, and configure applications to read/write to Cloud Datastore at cutover.

Answer: B

NO.76 Case Study: 4 - Dress4Win case study

Company Overview

Dress4win is a web-based company that helps their users organize and manage their personal wardrobe using a website and mobile application. The company also cultivates an active social network that connects their users with designers and retailers. They monetize their services through advertising, e-commerce, referrals, and a freemium app model. Company Background

Dress4win's application has grown from a few servers in the founder's garage to several hundred servers and appliances in a colocated data center. However, the capacity of their infrastructure is now insufficient for the application's rapid growth. Because of this growth and the company's desire to innovate faster, Dress4win is committing to a full migration to a public cloud. Solution Concept

For the first phase of their migration to the cloud, Dress4win is considering moving their development and test environments. They are also considering building a disaster recovery site, because their current infrastructure is at a single location. They are not sure which components of their architecture they can migrate as is and which components they need to change before migrating them.

Existing Technical Environment

The Dress4win application is served out of a single data center location.

Databases:

MySQL - user data, inventory, static data

- Redis - metadata, social graph, caching

Application servers:

Tomcat - Java micro-services

- Nginx - static content
- Apache Beam - Batch processing

Storage appliances:

iSCSI for VM hosts

- Fiber channel SAN - MySQL databases
- NAS - image storage, logs, backups

Apache Hadoop/Spark servers:

Data analysis

- Real-time trending calculations

MQ servers:

Messaging

- Social notifications
- Events

Miscellaneous servers:

82

Business Requirements

- Build a reliable and reproducible environment with scaled parity of production. Improve security by defining and adhering to a set of security and Identity and Access Management (IAM) best practices for cloud.
- Improve business agility and speed of innovation through rapid provisioning of new resources.
- Analyze and optimize architecture for performance in the cloud. Migrate fully to the cloud if all other requirements are met.

Technical Requirements

Evaluate and choose an automation framework for provisioning resources in cloud. Support failover of the production environment to cloud during an emergency. Identify production services that can migrate to cloud to save capacity.

Use managed services whenever possible.

Encrypt data on the wire and at rest.

Support multiple VPN connections between the production data center and cloud environment. CEO Statement

Our investors are concerned about our ability to scale and contain costs with our current infrastructure. They are also concerned that a new competitor could use a public cloud platform to offset their up-front investment and freeing them to focus on developing better features. CTO Statement

We have invested heavily in the current infrastructure, but much of the equipment is approaching the end of its useful life. We are consistently waiting weeks for new gear to be racked before we can start new projects. Our traffic patterns are highest in the mornings and weekend evenings; during other times, 80% of our capacity is sitting idle.

CFO Statement

Our capital expenditure is now exceeding our quarterly projections. Migrating to the cloud will likely cause an initial increase in spending, but we expect to fully transition before our next hardware refresh cycle. Our total cost of ownership (TCO) analysis over the next 5 years puts a cloud strategy between 30 to 50% lower than our current model. For this question, refer to the Dress4Win case study.

Dress4Win has configured a new uptime check with Google Stackdriver for several of their legacy services. The Stackdriver dashboard is not reporting the services as healthy. What should they do?

(드레스 4Win 은 구글 스택드라이버와 함께 자사의 레거시 서비스 중 몇 가지를 위한 새로운 가동 시간 검사를 구성했다. 스택 드라이버 대시보드는 서비스가 정상이라고 보고하지 않는다. 그들은 어떻게 해야 할까?)

A. Install the Stackdriver agent on all of the legacy web servers.

C. In the Cloud Platform Console download the list of the uptime servers' IP addresses and create an inbound firewall rule

(Cloud Platform Console 에서 가동 시간 서버의 IP 주소 목록을 다운로드하고 인바운드 방화벽 규칙을 생성)

C. Configure their load balancer to pass through the User-Agent HTTP header when the value matches GoogleStackdriverMonitoring-UptimeChecks (https://cloud.google.com/monitoring)

D. Configure their legacy web servers to allow requests that contain user-Agent HTTP header when the value matches GoogleStackdriverMonitoring-- UptimeChecks (https://cloud.google.com/monitoring)

Answer: B

Company Overview

Dress4win is a web-based company that helps their users organize and manage their personal wardrobe using a website and mobile application. The company also cultivates an active social

network that connects their users with designers and retailers. They monetize their services through advertising, e-commerce, referrals, and a freemium app model. Company Background

Dress4win's application has grown from a few servers in the founder's garage to several hundred servers and appliances in a colocated data center. However, the capacity of their infrastructure is now insufficient for the application's rapid growth. Because of this growth and the company's desire to innovate faster, Dress4win is committing to a full migration to a public cloud. Solution Concept

For the first phase of their migration to the cloud, Dress4win is considering moving their development and test environments. They are also considering building a disaster recovery site, because their current infrastructure is at a single location. They are not sure which components of their architecture they can migrate as is and which components they need to change before migrating them.

Existing Technical Environment

The Dress4win application is served out of a single data center location.

Databases:

MySQL - user data, inventory, static data

- Redis - metadata, social graph, caching

Application servers:

Tomcat - Java micro-services

- Nginx - static content
- Apache Beam - Batch processing

Storage appliances:

iSCSI for VM hosts

- Fiber channel SAN - MySQL databases
- NAS - image storage, logs, backups

Apache Hadoop/Spark servers:

Data analysis

- Real-time trending calculations

MQ servers:

Messaging

- Social notifications
- Events

Miscellaneous servers:

Jenkins, monitoring, bastion hosts, security

- scanners Business Requirements

Build a reliable and reproducible environment with scaled parity of production. Improve security by defining and adhering to a set of security and Identity and Access Management (IAM) best practices for cloud.

Improve business agility and speed of innovation through rapid provisioning of new resources.

84

Analyze and optimize architecture for performance in the cloud. Migrate fully to the cloud if all other requirements are met.

Technical Requirements

Evaluate and choose an automation framework for provisioning resources in cloud. Support failover of the production environment to cloud during an emergency. Identify production services that can migrate to cloud to save capacity.

Use managed services whenever possible.

Encrypt data on the wire and at rest.

Support multiple VPN connections between the production data center and cloud environment. CEO Statement

Our investors are concerned about our ability to scale and contain costs with our current infrastructure. They are also concerned that a new competitor could use a public cloud platform to offset their up-front investment and freeing them to focus on developing better features. CTO Statement

We have invested heavily in the current infrastructure, but much of the equipment is approaching the end of its useful life. We are consistently waiting weeks for new gear to be racked before we can start new projects. Our traffic patterns are highest in the mornings and weekend evenings; during other times, 80% of our capacity is sitting idle.

CFO Statement

Our capital expenditure is now exceeding our quarterly projections. Migrating to the cloud will likely cause an initial increase in spending, but we expect to fully transition before our next hardware refresh cycle. Our total cost of ownership (TCO) analysis over the next 5 years puts a cloud strategy between 30 to 50% lower than our current model. For this question, refer to the Dress4Win case study.

You want to ensure Dress4Win's sales and tax records remain available for infrequent viewing by auditors for at least 10 years. Cost optimization is your top priority. Which cloud services should you choose?

(매출 및 세금 기록은 최소 10 년 동안 감사인이 자주 볼 수 없는 상태로 유지된다. 비용 최적화가 최우선 과제 입니다. 어떤 클라우드 서비스를 선택해야 하는가?)

A. Google Cloud Storage Coldline to store the data, and gsutil to access the data.

(데이터를 저장하는 Google Cloud 스토리지 콜드라인과 데이터에 액세스하는 gsutil.)

B. Google Cloud Storage Nearline to store the data, and gsutil to access the data.

C. Google Bigtabte with US or EU as location to store the data, and gcloud to access the data.

D. BigQuery to store the data, and a web server cluster in a managed instance group to access the data. Google Cloud SQL mirrored across two distinct regions to store the data, and a Redis cluster in a managed instance group to access the data.

Answer: A

Explanation:

References: https://cloud.google.com/storage/docs/storage-classes

NO.78 Case Study: 4 - Dress4Win case study

Company Overview

Dress4win is a web-based company that helps their users organize and manage their personal wardrobe using a website and mobile application. The company also cultivates an active social network that connects their users with designers and retailers. They monetize their services through advertising, e-commerce, referrals, and a freemium app model. Company Background

Dress4win's application has grown from a few servers in the founder's garage to several hundred servers and appliances in a colocated data center. However, the capacity of their infrastructure is

85

now insufficient for the application's rapid growth. Because of this growth and the company's desire to innovate faster, Dress4win is committing to a full migration to a public cloud. Solution Concept

For the first phase of their migration to the cloud, Dress4win is considering moving their development and test environments. They are also considering building a disaster recovery site, because their current infrastructure is at a single location. They are not sure which components of their architecture they can migrate as is and which components they need to change before migrating them.

Existing Technical Environment

The Dress4win application is served out of a single data center location.

Databases:

MySQL - user data, inventory, static data

- Redis - metadata, social graph, caching

Application servers:

Tomcat - Java micro-services

- Nginx - static content
- Apache Beam - Batch processing

Storage appliances:

iSCSI for VM hosts

- Fiber channel SAN - MySQL databases
- NAS - image storage, logs, backups

Apache Hadoop/Spark servers:

Data analysis

- Real-time trending calculations

MQ servers:

Messaging

- Social notifications
- Events

Miscellaneous servers:

Jenkins, monitoring, bastion hosts, security

- scanners Business Requirements

Build a reliable and reproducible environment with scaled parity of production. Improve security by defining and adhering to a set of security and Identity and Access Management (IAM) best practices for cloud.

Improve business agility and speed of innovation through rapid provisioning of new resources.

Analyze and optimize architecture for performance in the cloud. Migrate fully to the cloud if all other requirements are met.

Technical Requirements

Evaluate and choose an automation framework for provisioning resources in cloud. Support failover of the production environment to cloud during an emergency. Identify production services that can

86

migrate to cloud to save capacity.
Use managed services whenever possible.
Encrypt data on the wire and at rest.
Support multiple VPN connections between the production data center and cloud environment. CEO Statement
Our investors are concerned about our ability to scale and contain costs with our current infrastructure. They are also concerned that a new competitor could use a public cloud platform to offset their up-front investment and freeing them to focus on developing better features. CTO Statement
We have invested heavily in the current infrastructure, but much of the equipment is approaching the end of its useful life. We are consistently waiting weeks for new gear to be racked before we can start new projects. Our traffic patterns are highest in the mornings and weekend evenings; during other times, 80% of our capacity is sitting idle.
CFO Statement
Our capital expenditure is now exceeding our quarterly projections. Migrating to the cloud will likely cause an initial increase in spending, but we expect to fully transition before our next hardware refresh cycle. Our total cost of ownership (TCO) analysis over the next 5 years puts a cloud strategy between 30 to 50% lower than our current model. For this question, refer to the Dress4Win case study.
Dress4Win has end-to-end tests covering 100% of their endpoints. They want to ensure that the move to the cloud does not introduce any new bugs.
Which additional testing methods should the developers employ to prevent an outage?
(드레스 4Win 은 엔드포인트의 100%를 포함하는 엔드투엔드 테스트를 한다. 이들은 클라우드로의 이동이 새로운 버그를 도입하지 않도록 보장하고자 한다. 개발자가 운영 중단을 방지하기 위해 어떤 추가 테스트 방법을 사용해야 하는가?)

A. They should enable Google Stackdriver Debugger on the application code to show errors in the code.
B. They should add additional unit tests and production scale load tests on their cloud staging environment.
(클라우드 스테이징 환경에서 장치 테스트와 생산 규모 부하 테스트를 추가해야 한다.)
C. They should run the end-to-end tests in the cloud staging environment to determine if the code is working as intended.
D. They should add canary tests so developers can measure how much of an impact the new release causes to latency.

Answer: B

Explanation:
B is correct answer because the question asks about additional methods to prevent an outage.
If they have already 100% coverage than they are smart enough to run those test on new platform as C describes.
(정전을 막기 위한 추가적인 방법을 묻는 질문이기 때문에 B 는 정답이다.
이미 100% 커버리지가 있는 경우, C 가 설명한 대로 새로운 플랫폼에서 테스트를 실행할 수 있을 만큼 충분히 똑똑하다.)

NO.79 Case Study: 4 - Dress4Win case study
Company Overview

Dress4win is a web-based company that helps their users organize and manage their personal wardrobe using a website and mobile application. The company also cultivates an active social network that connects their users with designers and retailers. They monetize their services through advertising, e-commerce, referrals, and a freemium app model. Company Background

Dress4win's application has grown from a few servers in the founder's garage to several hundred servers and appliances in a colocated data center. However, the capacity of their infrastructure is now insufficient for the application's rapid growth. Because of this growth and the company's desire

to innovate faster, Dress4win is committing to a full migration to a public cloud.

Solution Concept

For the first phase of their migration to the cloud, Dress4win is considering moving their development and test environments. They are also considering building a disaster recovery site, because their current infrastructure is at a single location. They are not sure which components of their architecture they can migrate as is and which components they need to change before migrating them.

Existing Technical Environment

The Dress4win application is served out of a single data center location.

Databases:

MySQL - user data, inventory, static data

- Redis - metadata, social graph, caching

Application servers:

Tomcat - Java micro-services

- Nginx - static content
- Apache Beam - Batch processing

Storage appliances:

iSCSI for VM hosts

- Fiber channel SAN - MySQL databases
- NAS - image storage, logs, backups

Apache Hadoop/Spark servers:

Data analysis

- Real-time trending calculations

MQ servers:

Messaging

- Social notifications
- Events

Miscellaneous servers:

Jenkins, monitoring, bastion hosts, security

- scanners Business Requirements
- Build a reliable and reproducible environment with scaled parity of production. Improve security by defining and adhering to a set of security and Identity and Access Management (IAM) best practices for cloud.

Improve business agility and speed of innovation through rapid provisioning of new resources.

Analyze and optimize architecture for performance in the cloud. Migrate fully to the cloud if all other requirements are met.

Technical Requirements

Evaluate and choose an automation framework for provisioning resources in cloud. Support failover of the production environment to cloud during an emergency. Identify production services that can migrate to cloud to save capacity.

88

Use managed services whenever possible.

Encrypt data on the wire and at rest.

Support multiple VPN connections between the production data center and cloud environment. CEO Statement

Our investors are concerned about our ability to scale and contain costs with our current infrastructure. They are also concerned that a new competitor could use a public cloud platform to offset their up-front investment and freeing them to focus on developing better features. CTO Statement

We have invested heavily in the current infrastructure, but much of the equipment is approaching the end of its useful life. We are consistently waiting weeks for new gear to be racked before we can start new projects. Our traffic patterns are highest in the mornings and weekend evenings; during other times, 80% of our capacity is sitting idle.

CFO Statement

Our capital expenditure is now exceeding our quarterly projections. Migrating to the cloud will likely cause an initial increase in spending, but we expect to fully transition before our next hardware refresh cycle. Our total cost of ownership (TCO) analysis over the next 5 years puts a cloud strategy between 30 to 50% lower than our current model. For this question, refer to the Dress4Win case study.

As part of their new application experience, Dress4Wm allows customers to upload images of themselves. The customer has exclusive control over who may view these images. Customers should be able to upload images with minimal latency and also be shown their images quickly on the main application page when they log in. Which configuration should Dress4Win use?

(새로운 애플리케이션 경험의 일환으로 회사는 고객이 자신의 이미지를 업로드할 수 있도록 한다. 고객은 이러한 이미지를 볼 수 있는 사용자를 독점적으로 통제한다.

고객은 최소한의 지연 시간으로 이미지를 업로드할 수 있어야 하며 로그인할 때 메인 애플리케이션 페이지에 신속하게 이미지를 표시할 수 있어야 한다. 회사에서는 어떤 구성을 사용해야 하는가?)

A. Store image files in a Google Cloud Storage bucket. Use Google Cloud Datastore to maintain metadata that maps each customer's ID and their image files.

B. Store image files in a Google Cloud Storage bucket. Add custom metadata to the uploaded images in Cloud Storage that contains the customer's unique ID.

(이미지 파일을 Google 클라우드 저장소 버킷에 저장하십시오. 고객의 고유 ID 가 포함된 클라우드 저장소의 업로드된 이미지에 사용자 지정 메타데이터를 추가.

➔ 클라우드 저장소에 저장 : 자신이 업로드 및 신속하게 이미지 접근 가능

➔ 고유 ID 포함 : 독점 통제)

C. Use a distributed file system to store customers' images. As storage needs increase, add more persistent disks and/or nodes. Assign each customer a unique ID, which sets each file's owner attribute, ensuring privacy of images.

D. Use a distributed file system to store customers' images. As storage needs increase, add more persistent disks and/or nodes. Use a Google Cloud SQL database to maintain metadata that maps each customer's ID to their image files.

Answer: B

NO.80 Case Study: 4 - Dress4Win case study

Company Overview

Dress4win is a web-based company that helps their users organize and manage their personal wardrobe using a website and mobile application. The company also cultivates an active social network that connects their users with designers and retailers. They monetize their services through advertising, e-commerce, referrals, and a freemium app model. Company Background

Dress4win's application has grown from a few servers in the founder's garage to several hundred servers and appliances in a colocated data center. However, the capacity of their infrastructure is now insufficient for the application's rapid growth. Because of this growth and the company's desire to innovate faster, Dress4win is committing to a full migration to a public cloud. Solution Concept

For the first phase of their migration to the cloud, Dress4win is considering moving their development and test environments. They are also considering building a disaster recovery site, because their current infrastructure is at a single location. They are not sure which components of their architecture they can migrate as is and which components they need to change before migrating them.

Existing Technical Environment

The Dress4win application is served out of a single data center location.

Databases:

MySQL - user data, inventory, static data

Redis - metadata, social graph, caching

Application servers:

Tomcat - Java micro-services

Nginx - static content

Apache Beam - Batch processing

Storage appliances:

iSCSI for VM hosts

Fiber channel SAN - MySQL databases

NAS - image storage, logs, backups

Apache Hadoop/Spark servers:

Data analysis

Real-time trending calculations

MQ servers:

Messaging

Social notifications

Events

Miscellaneous servers:

Jenkins, monitoring, bastion hosts, security

scanners Business Requirements

Build a reliable and reproducible environment with scaled parity of production. Improve security by defining and adhering to a set of security and Identity and Access Management (IAM) best practices for cloud.

Improve business agility and speed of innovation through rapid provisioning of new resources.

Analyze and optimize architecture for performance in the cloud. Migrate fully to the cloud if all other requirements are met.

Technical Requirements

Evaluate and choose an automation framework for provisioning resources in cloud. Support failover of the production environment to cloud during an emergency. Identify production services that can migrate to cloud to save capacity.

Use managed services whenever possible.

Encrypt data on the wire and at rest.

Support multiple VPN connections between the production data center and cloud environment.
(프로덕션 데이터 센터와 클라우드 환경 간의 여러 VPN 연결 지원)

CEO Statement

Our investors are concerned about our ability to scale and contain costs with our current infrastructure. They are also concerned that a new competitor could use a public cloud platform to offset their up-front investment and freeing them to focus on developing better features. CTO Statement

We have invested heavily in the current infrastructure, but much of the equipment is approaching the end of its useful life. We are consistently waiting weeks for new gear to be racked before we can start new projects. Our traffic patterns are highest in the mornings and weekend evenings; during other times, 80% of our capacity is sitting idle.

CFO Statement

Our capital expenditure is now exceeding our quarterly projections. Migrating to the cloud will likely cause an initial increase in spending, but we expect to fully transition before our next hardware refresh cycle. Our total cost of ownership (TCO) analysis over the next 5 years puts a cloud strategy between 30 to 50% lower than our current model. For this question, refer to the Dress4Win case study.

The Dress4Win security team has disabled external SSH access into production virtual machines (VMs) on Google Cloud Platform (GCP). The operations team needs to remotely manage the VMs, build and push Docker containers, and manage Google Cloud Storage objects. What can they do?
(드레스 4Win 보안 팀은 GCP(Google Cloud Platform)의 프로덕션 가상 머신(VM)에 대한 외부 SSH 액세스를 비활성화했다. 운영 팀은 VM 을 원격으로 관리하고, 도커 컨테이너를 구축 및 푸시하고, Google Cloud 스토리지 개체를 관리해야 한다. 그들은 무엇을 할 수 있을까?)

A. Grant the operations engineers access to use Google Cloud Shell.

B. Configure a VPN connection to GCP to allow SSH access to the cloud VMs.
(클라우드 VM 에 대한 SSH 액세스를 허용하도록 GCP 에 대한 VPN 연결을 구성하십시오.)

C. Develop a new access request process that grants temporary SSH access to cloud VMs when an operations engineer needs to perform a task.

D. Have the development team build an API service that allows the operations team to execute specific remote procedure calls to accomplish their tasks.

Answer: B

NO.81 Case Study: 4 - Dress4Win case study

Company Overview

Dress4win is a web-based company that helps their users organize and manage their personal wardrobe using a website and mobile application. The company also cultivates an active social network that connects their users with designers and retailers. They monetize their services through advertising, e-commerce, referrals, and a freemium app model.

(드레스 4 윈은 이용자가 웹사이트와 모바일 애플리케이션을 이용해 개인 의상실을 구성하고 관리할 수 있도록 돕는 웹 기반 기업이다. 디자이너, 유통업체와 사용자들을 연결하는 활발한 소셜네트워크도 육성 중)

Company Background

Dress4win's application has grown from a few servers in the founder's garage to several hundred servers and appliances in a colocated data center. However, the capacity of their infrastructure is now insufficient for the application's rapid growth. Because of this growth and the company's desire to innovate faster, Dress4win is committing to a full migration to a public cloud.

(드레스윈의 애플리케이션의 급속한 성장을 위해서는 현재 인프라 용량이 충분하지 않아 퍼블릭 클라우드로의 마이그레이션을 하고 있는 중이다)

Solution Concept

For the first phase of their migration to the cloud, Dress4win is considering moving their development and test environments. They are also considering building a disaster recovery site, because their current infrastructure is at a single location. They are not sure which components of their architecture they can migrate as is and which components they need to change before migrating them.

(개발 및 테스트 환경을 이전하는 것을 고려하고 있고, 인프라가 한 곳에 있기 때문에 복구 사이트 구축도 고려 중)

Existing Technical Environment

The Dress4win application is served out of a single data center location.
Databases:
MySQL - user data, inventory, static data
Redis - metadata, social graph, caching
Application servers:
Tomcat - Java micro-services
Nginx - static content
Apache Beam - Batch processing
Storage appliances:
iSCSI for VM hosts
Fiber channel SAN - MySQL databases
NAS - image storage, logs, backups
Apache Hadoop/Spark servers:
Data analysis
Real-time trending calculations
MQ servers:
Messaging
Social notifications
Events
Miscellaneous servers:
Jenkins, monitoring, bastion hosts, security scanners

Business Requirements

Build a reliable and reproducible environment with scaled parity of production. Improve security by defining and adhering to a set of security and Identity and Access Management (IAM) best practices for cloud.
Improve business agility and speed of innovation through rapid provisioning of new resources.
Analyze and optimize architecture for performance in the cloud. Migrate fully to the cloud if all other requirements are met.

Technical Requirements

Evaluate and choose an automation framework for provisioning resources in cloud. Support failover of the production environment to cloud during an emergency. Identify production services that can migrate to cloud to save capacity.
Use managed services whenever possible.
Encrypt data on the wire and at rest.
Support multiple VPN connections between the production data center and cloud environment.

CEO Statement

Our investors are concerned about our ability to scale and contain costs with our current infrastructure. They are also concerned that a new competitor could use a public cloud platform to offset their up-front investment and freeing them to focus on developing better features.

CTO Statement

We have invested heavily in the current infrastructure, but much of the equipment is approaching the end of its useful life. We are consistently waiting weeks for new gear to be racked before we can start new projects. Our traffic patterns are highest in the mornings and weekend evenings; during other times, 80% of our capacity is sitting idle.

CFO Statement

Our capital expenditure is now exceeding our quarterly projections. Migrating to the cloud will likely cause an initial increase in spending, but we expect to fully transition before our next hardware refresh cycle. Our total cost of ownership (TCO) analysis over the next 5 years puts a cloud strategy between 30 to 50% lower than our current model.
For this question, refer to the Dress4Win case study. **Dress4Win** would like to become familiar with **deploying applications to the cloud** by successfully deploying some applications quickly, as is. They have asked for your recommendation. What should you advise?

요구사항: Dress4Win 은 일부 애플리케이션을 현재와 같이 신속 배포해 클라우드에 애플리케이션 배포하는데 익숙해지고자 한다. 조언 사항은?

A. Identify self-contained applications with external dependencies as a first move to the cloud.

Answer: A

-> 클라우드로의 첫번째 이동으로 외부 의존성을 가진 독립형 애플리케이션 식별

NO.82 Case Study: 4 - Dress4Win case study
For this question, refer to the Dress4Win case study. As part of Dress4Win's plans to migrate to the cloud, they want to be able to set up a managed logging and monitoring system so they can handle spikes in their traffic load. They want to ensure that:
- **The infrastructure** can be notified when it needs to **scale up and down** to **handle the ebb and flow of usage** throughout the day
- Their administrators are **notified automatically** when their **application reports errors**.
- They can **filter their aggregated logs** down in order to **debug** one piece of the application across many hosts
Which Google StackDriver features should they use?

요구사항: 클라우드 마이그레이션은 트래픽 부하 급증 문제 해결을 위해 중앙 관리 로깅 및 모니터링 시스템 설정 필요할 때, Google StackDriver 의 어떤 기능을 사용해야 하는가?

(하루 이용량 감소 처리를 위해 인프라의 스케일 업, 다운 통지 / 오류 보고 시, 관리자에게 자동 알림 / 애플리케이션 중 하나를 여러 호스트에서 디버그하기 위해 집계 로그 필터링)

C. Monitoring, Logging, Alerts, Error Reporting

Answer: C

-> 모니터링, 로깅, 알람, 오류 보고

NO.83 You **created a pipeline** that can **deploy your source code changes** to your infrastructure in **instance groups** for **self-healing**. One of the changes **negatively affects** your key performance indicator. You are not sure how to fix it, and investigation could take up to a week. What should you do?

요구사항 : 자가 복구를 위해 인스터스 그룹의 인프라에 소스 코드 변경 사항을 배포하는 파이프라인 중 하나가 부정적 영향을 줄 때, 어떻게 해야 하는가?

B. Revert the source code change, and rerun the deployment pipeline

Answer: B

-> 소스 코드 변경 되돌리기, 배포 파이프라인 재실행

NO.84 Your organization wants to control **IAM policies** for different departments **independently, but centrally**. Which approach should you take?

요구사항: 여러 부서에 대한 IAM 정책을 독립적으로 중앙 제어하려 할 때 필요한 접근법은?

C. A single Organization with Folders for each department

Answer: C

-> 폴더는 클라우드 플랫폼 리소스 계층의 노드. 폴더는 프로젝트, 다른 폴더, 조합을 포함하고 있으며 조직의 프로젝트를 계층 구조로 그룹화할 수 있음. 또한, 공통 IAM 정책을 공유하는 리소스 그룹화에 사용됨. 여러 폴더나 리소스를 포함할 수 있지만, 지정된 폴더나 리소스는 정확히 하나의 상위 폴더를 가짐.

Explanation: **Folders** are nodes in the Cloud Platform Resource Hierarchy. A folder can contain projects, other folders, or a combination of both. You can **use folders to group projects under an organization in a hierarchy**. For example, your organization might contain multiple departments, each with its own set of GCP resources. Folders allow you to group these resources on a per-department basis. Folders **are used to group resources** that **share common IAM policies**. While a folder can contain multiple folders or resources, a given folder or resource can have exactly one parent.

References: https://cloud.google.com/resource-manager/docs/creating-managing-folders

NO.85 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 instance** in a different project in the US-East region. What steps must you take?

요구사항: 미국 중앙지역에 있는 Linux 가상머신의 복사본을 만들 때, 변경 사항에 있어 쉽게 관리 및 교체하려 한다. 미국 동부지역의 다른 프로젝트에 새 인스턴스로 복사본을 배포할 때, 필요한 단계는?

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.

Answer: D

-> 루트 디스크 스냅샷 생성, 이미지 파일 생성, 루트 디스크의 이미지 파일을 이용해 새로운 가상 머신 인스턴스 생성 (모든 조건 충족, 수행이 쉽고 프로젝트와 지역을 넘나들며 작동함)

Explanation:
D) (Correct Answer) - This approach meets all of the requirements, it is easy to do and works cross project and cross region.
Reference Resources:
https://cloud.google.com/compute/docs/images/sharing-images-across-projects

NO.86 You are designing a mobile chat application. You want **to ensure people cannot spoof chat messages**, by providing a message were sent by a specific user.
What should you do?
요구사항 : 사람들이 채팅을 스푸핑하지 못하도록 하려면 어떻게 해야하나?

C. Use **public key infrastructure (PKI) to encrypt the message client side** using the originating user's

private key. (공개키를 사용하여 클라이언트 측 암호화)

Answer: C
Explanation:
It is C as **client side should encrypt the message using originating cert**.
(클라이언트 측에서 원본 인증서를 사용해 메시지를 암호해화해야함)

NO.87 As part of implementing their disaster recovery plan, your company is trying to replicate their production MySQL database **from their private data center to their GCP project** using a Google Cloud
VPN connection. They are **experiencing latency issues and a small amount of packet loss that is**
disrupting the replication. What should they do?
요구사항 : google cloud 를 사용해 개인 데이터 센터에서 GCP 프로젝트로 데이터베이스를

VPN 연결하려 한다. 지연 시간 문제와 적은 양의 패킷 손실이 발생하는 경우 복제가 중단이 되는데

어떻게 해야하나?

B. Configure a Google Cloud Dedicated Interconnect. (Google Cloud Dedicated Interconnect 를 구성)

Answer: B

➔ Dedicated Interconnect는 온프레미스 네트워크와 Google 네트워크(VPC) 간에 물리적인 직접 연결을 제공. 사용하면 네트워크 간에 대량의 데이터를 전송할 수 있음.

NO.88 Case Study: 5 - Dress4win
Company Overview
Dress4win is a web-based company that helps their users organize and manage their personal wardrobe using a website and mobile application. The company also cultivates an active social network that connects their users with designers and retailers. They monetize their services through advertising, e-commerce, referrals, and a freemium app model. The application has grown from a few servers in the founder's garage to several hundred servers and appliances in a collocated data center. However, the capacity of their infrastructure is now insufficient for the application's rapid growth. Because of this growth and the company's desire to innovate faster.

Dress4Win is committing to a full migration to a public cloud. (**81 의 Company Overview**

과 동일)

Solution Concept

For the first phase of their migration to the cloud, Dress4win is moving their development and test

environments. They are also building a disaster recovery site, because their current infrastructure is at a single location. They are not sure which components of their architecture they can migrate as is and which components they need to change before migrating them

Existing Technical Environment

The Dress4win application is served out of a single data center location. All servers run Ubuntu LTS v16.04.

Databases:

MySQL. 1 server for user data, inventory, static data:

- MySQL 5.8
- 8 core CPUs
- 128 GB of RAM
- 2x 5 TB HDD (RAID 1)

Redis 3 server cluster for metadata, social graph, caching. Each server is:

- Redis 3.2
- 4 core CPUs
- 32GB of RAM

Compute:

40 Web Application servers providing micro-services based APIs and static content.

- Tomcat - Java
- Nginx
- 4 core CPUs
- 32 GB of RAM

20 Apache Hadoop/Spark servers:

- Data analysis
- Real-time trending calculations
- 8 core CPUS
- 128 GB of RAM
- 4x 5 TB HDD (RAID 1)

3 RabbitMQ servers for messaging, social notifications, and events:

- 8 core CPUs
- 32GB of RAM

Miscellaneous servers:

- Jenkins, monitoring, bastion hosts, security scanners
- 8 core CPUs
- 32GB of RAM

Storage appliances:

iSCSI for VM hosts

Fiber channel SAN - MySQL databases

- 1 PB total storage; 400 TB available

NAS - image storage, logs, backups

- 100 TB total storage; 35 TB available

Business Requirements

Build a reliable and reproducible environment with scaled parity of production.

Improve security by defining and adhering to a set of security and Identity and Access Management (IAM) best practices for cloud.

Improve business agility and speed of innovation through rapid provisioning of new resources.

Analyze and optimize architecture for performance in the cloud.

Technical Requirements

Easily create non-production environment in the cloud.

Implement an automation framework for provisioning resources in cloud.

Implement a continuous deployment process for deploying applications to the on-premises datacenter or cloud.

Support failover of the production environment to cloud during an emergency.

Support multiple private connections between the production data center and cloud environment.

Executive Statement

Our investors are concerned about our ability to scale and contain costs with our current infrastructure. They are also concerned that a competitor could use a public cloud platform to offset their up-front investment and free them to focus on developing better features. Our traffic patterns are highest in the mornings and weekend evenings; during other times, 80% of our capacity is sitting idle.

Our capital expenditure is now exceeding our quarterly projections. Migrating to the cloud will likely cause an initial increase in spending, but we expect to fully transition before our next hardware refresh cycle. Our total cost of ownership (TCO) analysis over the next 5 years for a public cloud strategy achieves a cost reduction between 30% and 50% over our current model.

For this question, refer to the Dress4Win case study. Dress4Win is expected to grow to 10 times its size in 1 year with a corresponding growth in data and traffic that mirrors the existing patterns of usage. The CIO has set the target of **migrating production infrastructure to the cloud within the next**

6 months. How will you configure the solution **to scale for this growth without making major application changes and still maximize the ROI?**

요구사항 : 6 개월을 목표로 프로덕션 인프라를 클라우드로 마이그레이션하려고 한다. 이러한 성장에 맞게 확장할 수 있도록 하려면?

D**.** Implement managed instance groups for the Tomcat and Nginx. Migrate MySQL to Cloud SQL, RabbitMQ to Cloud Pub/Sub, Hadoop to Cloud Dataproc, and NAS to Cloud Storage.

(Tomcat 및 Nginx 에 대한 관리 인스턴스 그룹을 구현. 또 MySQL 을 클라우드 SQL 로 마이그레이션, RabbitMQ 에서 Cloud Pub/Sub 로, Hadoop 에서 Cloud 데이터로, NAS 에서 클라우드 스토리지로 구현한다.)

Answer: D

NO.89 Case Study: 5 - Dress4win

Company Overview

Dress4win is a web-based company that helps their users organize and manage their personal wardrobe using a website and mobile application. The company also cultivates an active social network that connects their users with designers and retailers. They monetize their services through advertising, e-commerce, referrals, and a freemium app model. The application has grown from a few servers in the founder's garage to several hundred servers and appliances in a collocated data center. However, the capacity of their infrastructure is now insufficient for the application's rapid growth. Because of this growth and the company's desire to innovate faster.

Dress4Win is committing to a full migration to a public cloud. (드레스 4 윈은 웹 기반의 회사로 사용자가 개인 정보를 정리하고 관리할 수 있도록 돕는다. 설립자의 정비소에 있는 서버 수백 대의 서버 및 어플라이언스를 데이터 센터로 결합했지만 퍼블릭 클라우드로의 완전한 마이그레이션에 전념 중)

Solution Concept

For the first phase of their migration to the cloud, Dress4win is moving their development and test environments. They are also building a disaster recovery site, because their current infrastructure is at a single location. They are not sure which components of their architecture they can migrate as is and which components they need to change before migrating them. (개발 및 테스트에 진행 중이며 인프라가 구축되어 있어 재해 복구 사이트도 구축 중)

Existing Technical Environment

The Dress4win application is served out of a single data center location. All servers run Ubuntu LTS

Databases:
MySQL. 1 server for user data, inventory, static data:
- MySQL 5.8
- 8 core CPUs
- 128 GB of RAM
- 2x 5 TB HDD (RAID 1)
Redis 3 server cluster for metadata, social graph, caching. Each server is:
- Redis 3.2
- 4 core CPUs
- 32GB of RAM
Compute:
40 Web Application servers providing micro-services based APIs and static content.
- Tomcat - Java
- Nginx
- 4 core CPUs
- 32 GB of RAM
20 Apache Hadoop/Spark servers:
- Data analysis
- Real-time trending calculations
- 8 core CPUS
- 128 GB of RAM
- 4x 5 TB HDD (RAID 1)
3 RabbitMQ servers for messaging, social notifications, and events:
- 8 core CPUs
- 32GB of RAM
Miscellaneous servers:
- Jenkins, monitoring, bastion hosts, security scanners
- 8 core CPUs
- 32GB of RAM
Storage appliances:
iSCSI for VM hosts
Fiber channel SAN - MySQL databases
- 1 PB total storage; 400 TB available
NAS - image storage, logs, backups
- 100 TB total storage; 35 TB available

Business Requirements

Build a reliable and reproducible environment with scaled parity of production.
Improve security by defining and adhering to a set of security and Identity and Access Management (IAM) best practices for cloud.
Improve business agility and speed of innovation through rapid provisioning of new resources.
Analyze and optimize architecture for performance in the cloud.

Technical Requirements

Easily create non-production environment in the cloud.
Implement an automation framework for provisioning resources in cloud.
Implement a continuous deployment process for deploying applications to the on-premises datacenter or cloud.
Support failover of the production environment to cloud during an emergency.
Encrypt data on the wire and at rest.
Support multiple private connections between the production data center and cloud environment.

Executive Statement

Our investors are concerned about our ability to scale and contain costs with our current

infrastructure. They are also concerned that a competitor could use a public cloud platform to offset their up-front investment and free them to focus on developing better features. Our traffic patterns are highest in the mornings and weekend evenings; during other times, 80% of our capacity is sitting idle.
Our capital expenditure is now exceeding our quarterly projections. Migrating to the cloud will likely cause an initial increase in spending, but we expect to fully transition before our next hardware refresh cycle. Our total cost of ownership (TCO) analysis over the next 5 years for a public cloud strategy achieves a cost reduction between 30% and 50% over our current model.
For this question, refer to the Dress4Win case study. Considering the given business requirements, how would you **automate the deployment of web and transactional data layers**?

요구사항 : 주어진 비즈니스 요구 사항을 고려해, 웹 및 트랜잭션 데이터 계층을 구현을 어떻게 자동화하겠는가?

C. Migrate Nginx and Tomcat to App Engine. Deploy a Cloud Datastore server to replace the MySQL server in a high-availability configuration. Deploy Jenkins to Compute Engine using Cloud Launcher.

(Nginx 및 Tomcat 을 App Engine 으로 마이그레이션한다. MySQL 을 대체할 클라우드 데이터스토어 서버 배포한다. 클라우드 시작 프로그램을 사용해 Jenkins 를 컴퓨팅 엔진에 배포한다.)

Answer: C

NO.90 Case Study: 5 - Dress4win (89 번과 지문 동일)

Company Overview

Dress4win is a web-based company that helps their users organize and manage their personal wardrobe using a website and mobile application. The company also cultivates an active social network that connects their users with designers and retailers. They monetize their services through advertising, e-commerce, referrals, and a freemium app model. The application has grown from a few servers in the founder's garage to several hundred servers and appliances in a collocated data center. However, the capacity of their infrastructure is now insufficient for the application's rapid growth. Because of this growth and the company's desire to innovate faster.
Dress4Win is committing to a full migration to a public cloud

Solution Concept

For the first phase of their migration to the cloud, Dress4win is moving their development and test environments. They are also building a disaster recovery site, because their current infrastructure is at a single location. They are not sure which components of their architecture they can migrate as is and which components they need to change before migrating them.

Existing Technical Environment

The Dress4win application is served out of a single data center location. All servers run Ubuntu LTS v16.04.
Databases:
MySQL. 1 server for user data, inventory, static data:
- MySQL 5.8
- 8 core CPUs
- 128 GB of RAM
- 2x 5 TB HDD (RAID 1)

Redis 3 server cluster for metadata, social graph, caching. Each server is:
- Redis 3.2
- 4 core CPUs
- 32GB of RAM

Compute:
40 Web Application servers providing micro-services based APIs and static content.
- Tomcat - Java
- Nginx
- 4 core CPUs

20 Apache Hadoop/Spark servers:
- Data analysis
- Real-time trending calculations
- 8 core CPUS
- 128 GB of RAM
- 4x 5 TB HDD (RAID 1)
3 RabbitMQ servers for messaging, social notifications, and events:
- 8 core CPUs
- 32GB of RAM
Miscellaneous servers:
- Jenkins, monitoring, bastion hosts, security scanners
- 8 core CPUs
- 32GB of RAM
Storage appliances:
iSCSI for VM hosts
Fiber channel SAN - MySQL databases
- 1 PB total storage; 400 TB available
NAS - image storage, logs, backups
- 100 TB total storage; 35 TB available

Business Requirements

Build a reliable and reproducible environment with scaled parity of production.
Improve security by defining and adhering to a set of security and Identity and Access Management (IAM) best practices for cloud.
Improve business agility and speed of innovation through rapid provisioning of new resources.
Analyze and optimize architecture for performance in the cloud.

Technical Requirements

Easily create non-production environment in the cloud.
Implement an automation framework for provisioning resources in cloud.
Implement a continuous deployment process for deploying applications to the on-premises datacenter or cloud.
Support failover of the production environment to cloud during an emergency.
Encrypt data on the wire and at rest.
Support multiple private connections between the production data center and cloud environment.

Executive Statement

Our investors are concerned about our ability to scale and contain costs with our current infrastructure. They are also concerned that a competitor could use a public cloud platform to offset their up-front investment and free them to focus on developing better features. Our traffic patterns are highest in the mornings and weekend evenings; during other times, 80% of our capacity is sitting idle.
Our capital expenditure is now exceeding our quarterly projections. Migrating to the cloud will likely cause an initial increase in spending, but we expect to fully transition before our next hardware refresh cycle. Our total cost of ownership (TCO) analysis over the next 5 years for a public cloud strategy achieves a cost reduction between 30% and 50% over our current model.
For this question, refer to the Dress4Win case study. **Which of the compute services should be migrated as -is and would still be an optimized architecture for performance in the cloud**?

요구사항 : 어떠한 컴퓨팅 서비스가 그대로 마이그레이션되고, 클라우드 성능에 최적화된 아키텍처일까?

D. Jenkins, monitoring, bastion hosts, security scanners services deployed on custom machine types (Jenkins, 모니터링, 보안 호스트, 사용자 지정 시스템 유형에 배포된 보안 스캐너 서비스)

NO.91 Case Study: 6 - TerramEarth

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.

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

TerramEarth's existing architecture is composed of Linux and Windows-based systems that reside in a single U.S. west coast based data center. These systems gzip CSV files from the field and upload via FTP, 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.
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 - to create compelling joint offerings

Technical Requirements

Expand beyond a single datacenter to decrease latency to the American Midwest and east coast.

Create a backup strategy.

Increase security of data transfer from equipment to the datacenter.

Improve data in the data warehouse.

Use customer and equipment data to anticipate customer needs.

Application 1: Data ingest

A custom Python application reads uploaded datafiles from a single server, writes to the data warehouse.

Compute:

Windows Server 2008 R2

- 16 CPUs
- 128 GB of RAM
- 10 TB local HDD storage

Application 2: Reporting

An off the shelf application that business analysts use to run a daily report to see what equipment needs repair. Only 2 analysts of a team of 10 (5 west coast, 5 east coast) can connect to the reporting application at a time.

Compute:

Off the shelf application. License tied to number of physical CPUs

- Windows Server 2008 R2
- 16 CPUs
- 32 GB of RAM
- 500 GB HDD

Data warehouse:

A single PostgreSQL server

- RedHat Linux
- 64 CPUs
- 128 GB of RAM
- 4x 6TB HDD in RAID 0

Executive Statement

Our competitive advantage has always been in the manufacturing process, with our ability to build better vehicles for lower 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. My goals are to build our skills while addressing immediate market needs through incremental innovations.

For this question, refer to the TerramEarth case study. To be compliant with European GDPR regulation, TerramEarth is required to delete data generated from its European customers after a period of 36 months when it contains personal data. In the new architecture, this data will be stored in both Cloud Storage and BigQuery. What should you do?

C. Create a BigQuery time-partitioned table for the European data, and set the partition expiration period to 36 months. For Cloud Storage, use gsutil to enable lifecycle management using a DELETE action with an Age condition of 36 months.
Answer: C

요구사항 : 유럽 GDPR 규정을 준수하기 위해 TerramEarth 는 개인 데이터가 포함 된 36 개월 후에 유럽 고객으로부터 생성 된 데이터를 삭제해야합니다. 새 아키텍처에서는이 데이터가 Cloud Storage 와 BigQuery 에 모두 저장됩니다. 어떻게해야합니까?

해결방법 : C. 유럽 데이터에 대해 BigQuery 시간으로 파티션을 나눈 테이블을 만들고 파티션 만료 기간을 36 개월로 설정합니다. Cloud Storage 의 경우 gsutil 을 사용하여 수명 조건이 36 개월 인 DELETE 작업을 사용하여 수명주기 관리를 사용 설정합니다.

NO.92 Case Study: 6 - TerramEarth
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.

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
TerramEarth's existing architecture is composed of Linux and Windows-based systems that reside in a single U.S. west coast based data center. These systems gzip CSV files from the field and upload via FTP, 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.
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 - to create compelling joint offerings for their customers.

Technical Requirements
Expand beyond a single datacenter to decrease latency to the American Midwest and east coast.
Create a backup strategy.
Increase security of data transfer from equipment to the datacenter.
Improve data in the data warehouse.
Use customer and equipment data to anticipate customer needs.

Application 1: Data ingest
A custom Python application reads uploaded datafiles from a single server, writes to the

Compute:

Windows Server 2008 R2

- 16 CPUs
- 128 GB of RAM
- 10 TB local HDD storage

Application 2: Reporting

An off the shelf application that business analysts use to run a daily report to see what equipment needs repair. Only 2 analysts of a team of 10 (5 west coast, 5 east coast) can connect to the reporting application at a time.

Compute:

Off the shelf application. License tied to number of physical CPUs

- Windows Server 2008 R2
- 16 CPUs
- 32 GB of RAM
- 500 GB HDD

Data warehouse:

A single PostgreSQL server

- RedHat Linux
- 64 CPUs
- 128 GB of RAM
- 4x 6TB HDD in RAID 0

Executive Statement

Our competitive advantage has always been in the manufacturing process, with our ability to build better vehicles for lower 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. My goals are to build our skills while addressing immediate market needs through incremental innovations.

For this question, refer to the TerramEarth case study. TerramEarth has decided to store data files in Cloud Storage. You need to configure Cloud Storage lifecycle rule to store 1 year of data and minimize file storage cost. Which two actions should you take?

A. Create a Cloud Storage lifecycle rule with Age: "30", Storage Class: "Standard", and Action: "Set to Coldline", and create a second GCS life-cycle rule with Age: "365", Storage

Answer: A

요구사항 : TerramEarth 는 Cloud Storage 에 데이터 파일을 저장하기로 결정했습니다. 1 년의 데이터를 저장하고 파일 스토리지 비용을 최소화하도록 Cloud Storage 수명주기 규칙을 구성해야합니다. 어떤 두 가지 조치를 취해야합니까?

해결방법 : Age: "30", Storage Class: "Standard", and Action: "Set to Coldline" 로 수명주기 규칙을 만들고 "365", Storage Class: "Coldline", and Action: "Delete"로 두번째 수명주기 규칙을만듭니다.

NO.93 Case Study: 6 - TerramEarth

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.

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

TerramEarth's existing architecture is composed of Linux and Windows-based systems that reside in a single U.S. west coast based data center. These systems gzip CSV files from the field and upload via FTP, 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.
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 - to create compelling joint offerings for their customers.

Technical Requirements

Expand beyond a single datacenter to decrease latency to the American Midwest and east coast.
Create a backup strategy.
Increase security of data transfer from equipment to the datacenter.
Improve data in the data warehouse.
Use customer and equipment data to anticipate customer needs.

Application 1: Data ingest

A custom Python application reads uploaded datafiles from a single server, writes to the data warehouse.

Compute:

Windows Server 2008 R2

- 16 CPUs
- 128 GB of RAM
- 10 TB local HDD storage

Application 2: Reporting

An off the shelf application that business analysts use to run a daily report to see what equipment needs repair. Only 2 analysts of a team of 10 (5 west coast, 5 east coast) can connect to the reporting application at a time.

Compute:

Off the shelf application. License tied to number of physical CPUs

- Windows Server 2008 R2

- 16 CPUs
- 32 GB of RAM
- 500 GB HDD

Data warehouse:

A single PostgreSQL server

- RedHat Linux
- 64 CPUs
- 128 GB of RAM
- 4x 6TB HDD in RAID 0

Executive Statement

Our competitive advantage has always been in the manufacturing process, with our ability to build better vehicles for lower 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. My goals are to build our skills while addressing immediate market needs through incremental innovations.

For this question, refer to the TerramEarth case study. You need to implement a reliable, scalable GCP solution for the data warehouse for your company, TerramEarth. Considering the TerramEarth business and technical requirements, what should you do?

A. Replace the existing data warehouse with BigQuery. Use table partitioning.

Answer: A

Explanation:

1. BigQuery does not guarantee data consistency for external data sources. Changes to the underlying data while a query is running can result in unexpected behavior.
2. Query performance for external data sources may not be as high as querying data in a native BigQuery table.

요구사항 : TerramEarth 의 데이터웨어 하우스를위한 안정적이고 확장 가능한 GCP 솔루션을 구현해야합니다. TerramEarth 비즈니스 및 기술 요구 사항을 고려할 때 어떻게해야합니까?

해결방법 : A. 기존 데이터웨어 하우스를 BigQuery 로 교체합니다. 테이블 파티셔닝을 사용하십시오.

1. BigQuery 는 외부 데이터 소스에 대한 데이터 일관성을 보장하지 않습니다. 쿼리가 실행되는 동안 기본 데이터를 변경하면 예기치 않은 동작이 발생할 수 있습니다.

2. 외부 데이터 소스의 쿼리 성능은 기본 BigQuery 테이블의 데이터 쿼리만큼 높지 않을 수 있습니다.

NO.94 Case Study: 7 - Mountkirk Games

Company Overview

Mountkirk Games makes online, session-based, multiplayer games for mobile platforms. They build all of their games using some server-side integration. Historically, they have used cloud providers to lease physical servers.

Due to the unexpected popularity of some of their games, they have had problems scaling their global audience, application servers, MySQL databases, and analytics tools.

Their 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.

Business Requirements

Increase to a global footprint.

Improve uptime - downtime is loss of players. Increase efficiency of the cloud resources we use. Reduce latency to all customers.

Technical Requirements

Requirements for Game Backend Platform

Dynamically scale up or down based on game activity.

Connect to a transactional database service to manage user profiles and game state.

Store game activity in a timeseries database service for future analysis.

As the system scales, ensure that data is not lost due to processing backlogs.

Run hardened Linux distro.

Requirements for Game Analytics Platform

Dynamically scale up or down based on game activity

Process incoming data on the fly directly from the game servers
Process data that arrives late because of slow mobile networks
Allow queries to access at least 10 TB of historical data
Process files that are regularly uploaded by users' mobile devices

Executive Statement
Our last successful game did not scale well with our previous cloud provider, resulting 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 game to target users.
Additionally, 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.

For this question, refer to the Mountkirk Games case study. Mountkirk Games wants to migrate from their current analytics and statistics reporting model to one that meets their technical requirements on Google Cloud Platform. Which two steps should be part of their migration plan? (Choose two.)

A. Evaluate the impact of migrating their current batch ETL code to Cloud Dataflow.
B. Write a schema migration plan to denormalize data for better performance in BigQuery.
Answer: AB

요구사항 : Mountkirk Games 는 현재 분석 및 통계보고 모델에서 Google Cloud Platform 의 기술적 요구 사항을 충족하는 모델로 마이그레이션하려고합니다. 마이그레이션 계획에 포함되어야하는 두 단계는 무엇입니까?

해결방법 : A. 현재 일괄 ETL 코드를 Cloud Dataflow 로 마이그레이션 할 때의 영향을 평가합니다.
B. BigQuery 에서 더 나은 성능을 위해 데이터를 비정규 화하는 스키마 마이그레이션 계획을 작성합니다.

NO.95 Case Study: 7 - Mountkirk Games

Company Overview

Mountkirk Games makes online, session-based, multiplayer games for mobile platforms. They build all of their games using some server-side integration. Historically, they have used cloud providers to lease physical servers.

Due to the unexpected popularity of some of their games, they have had problems scaling their global audience, application servers, MySQL databases, and analytics tools.

Their 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.

Business Requirements

Increase to a global footprint.

Improve uptime - downtime is loss of players. Increase efficiency of the cloud resources we use. Reduce latency to all customers.

Technical Requirements

Requirements for Game Backend Platform

Dynamically scale up or down based on game activity.

Connect to a transactional database service to manage user profiles and game state.

Store game activity in a timeseries database service for future analysis.

As the system scales, ensure that data is not lost due to processing backlogs.

Run hardened Linux distro.

Requirements for Game Analytics Platform

Dynamically scale up or down based on game activity

Process incoming data on the fly directly from the game servers

Process data that arrives late because of slow mobile networks

Allow queries to access at least 10 TB of historical data

Process files that are regularly uploaded by users' mobile devices

Executive Statement

Our last successful game did not scale well with our previous cloud provider, resulting 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 game to target users.

Additionally, 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.

For this question, refer to the Mountkirk Games case study. You need to analyze and define the technical architecture for the compute workloads for your company, Mountkirk Games.

Considering the Mountkirk Games business and technical requirements, what should you do?

D. Create a global load balancer with managed instance groups and autoscaling policies. Use non- preemptible Compute Engine instances.

Answer: D

요구사항 : Mountkirk Games 의 컴퓨팅 워크로드에 대한 기술 아키텍처를 분석하고 정의해야합니다.

Mountkirk Games 비즈니스 및 기술 요구 사항을 고려할 때 어떻게해야합니까?

해결방법 : D. 관리 형 인스턴스 그룹 및 자동 확장 정책을 사용하여 전역 부하 분산기를 만듭니다. 비선 점형 Compute Engine 인스턴스를 사용합니다.

NO.96 Case Study: 7 - Mountkirk Games

Company Overview

Mountkirk Games makes online, session-based, multiplayer games for mobile platforms. They build all of their games using some server-side integration. Historically, they have used cloud providers to lease physical servers.

Due to the unexpected popularity of some of their games, they have had problems scaling their global audience, application servers, MySQL databases, and analytics tools.

Their 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.

Business Requirements

Increase to a global footprint.
Improve uptime - downtime is loss of players. Increase efficiency of the cloud resources we use. Reduce latency to all customers.

Technical Requirements

Requirements for Game Backend Platform

Dynamically scale up or down based on game activity.
Connect to a transactional database service to manage user profiles and game state.
Store game activity in a timeseries database service for future analysis.
As the system scales, ensure that data is not lost due to processing backlogs.
Run hardened Linux distro.

Requirements for Game Analytics Platform

Dynamically scale up or down based on game activity
Process incoming data on the fly directly from the game servers
Process data that arrives late because of slow mobile networks
Allow queries to access at least 10 TB of historical data
Process files that are regularly uploaded by users' mobile devices

Executive Statement

Our last successful game did not scale well with our previous cloud provider, resulting 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 game to target users.
Additionally, 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.

For this question, refer to the Mountkirk Games case study. Mountkirk Games wants to design their solution for the future in order to take advantage of cloud and technology improvements as they become available. Which two steps should they take? (Choose two.)

C. Set up a CI/CD pipeline using Jenkins and Spinnaker to automate canary deployments and improve development velocity.
E. Implement a weekly rolling maintenance process for the Linux virtual machines so they can apply critical kernel patches and package updates and reduce the risk of 0-day vulnerabilities.
Answer: CE

요구사항 : 클라우드 업체와 확장이 진행되지 않아 채택률이 낮아지고 게임 평판에 영향을 미치고 있습니다. 투자자들은 게임의 속도와 안정성을 평가하기 위해 더 많은 핵심 성과 지표(KPI)는 물론, 사용자를 대상으로 게임을 조정할 수 있도록 사용 패턴에 대한 더 깊은 통찰력을 제공하는 기타 지표를 원합니다. 또한 현재 기술 스택은 필요한 규모를 제공 할 수 없으므로 MySQL 을 대체하고 자동 확장, 낮은 지연로드 밸런싱을 제공하고 물리적 서버 관리에서 해방되는 환경으로 변경하고자 합니다. 이때 어떤 두 절차를 거쳐야합니까?

해결방법 : C. Jenkins 및 Spinnaker 를 사용하여 CI / CD 파이프 라인을 설정하여 카나리아 배포를 자동화하고 개발 속도를 개선합니다. E. Linux 가상 머신에 대한 주간 롤링 유지 관리 프로세스를 구현하여 중요한 커널 패치 및 패키지 업데이트를 적용하고 0 일 취약점의 위험을 줄일 수 있습니다.

NO.97 Case Study: 7 - Mountkirk Games

Company Overview

Mountkirk Games makes online, session-based, multiplayer games for mobile platforms. They build all of their games using some server-side integration. Historically, they have used cloud providers to lease physical servers.

Due to the unexpected popularity of some of their games, they have had problems scaling their global audience, application servers, MySQL databases, and analytics tools.

Their 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.

Business Requirements

Increase to a global footprint.

Improve uptime - downtime is loss of players. Increase efficiency of the cloud resources we use. Reduce latency to all customers.

Technical Requirements

Requirements for Game Backend Platform

Dynamically scale up or down based on game activity.

Connect to a transactional database service to manage user profiles and game state.

Store game activity in a timeseries database service for future analysis.

As the system scales, ensure that data is not lost due to processing backlogs.

Run hardened Linux distro.

Requirements for Game Analytics Platform

Dynamically scale up or down based on game activity

Process incoming data on the fly directly from the game servers

Process data that arrives late because of slow mobile networks

Allow queries to access at least 10 TB of historical data

Executive Statement

Our last successful game did not scale well with our previous cloud provider, resulting 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 game to target users.

Additionally, 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.

For this question, refer to the Mountkirk Games case study. Mountkirk Games wants you to design a way to test the analytics platform's resilience to changes in mobile network latency.What should you do?

D. Create an opt-in beta of the game that runs on players' mobile devices and collects response times from analytics endpoints running in Google Cloud Platform regions all over the world.

Answer: D

요구사항 : Mountkirk Games 는 모바일 네트워크 대기 시간의 변화에 대한 분석 플랫폼의 복원력을 테스트하는 방법을 설계하기를 원합니다. 어떤 방법을 사용해야 할까요?

해결방법 : D. 플레이어의 휴대 기기에서 실행되는 게임의 옵트 인 베타를 만들고 전 세계 Google Cloud Platform 지역에서 실행되는 분석 엔드 포인트에서 응답 시간을 수집합니다.

NO.98 Case Study: 7 - Mountkirk Games

Company Overview

Mountkirk Games makes online, session-based, multiplayer games for mobile platforms. They build all of their games using some server-side integration. Historically, they have used cloud providers to lease physical servers.

Due to the unexpected popularity of some of their games, they have had problems scaling their global audience, application servers, MySQL databases, and analytics tools.

Their current model is to write game statistics to files and send them through an ETL tool that

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.

Business Requirements

Increase to a global footprint.

Improve uptime - downtime is loss of players. Increase efficiency of the cloud resources we use. Reduce latency to all customers.

Technical Requirements

Requirements for Game Backend Platform

Dynamically scale up or down based on game activity.

Connect to a transactional database service to manage user profiles and game state.

Store game activity in a timeseries database service for future analysis.

As the system scales, ensure that data is not lost due to processing backlogs.

Run hardened Linux distro.

Requirements for Game Analytics Platform

Dynamically scale up or down based on game activity

Process incoming data on the fly directly from the game servers

Process data that arrives late because of slow mobile networks

Allow queries to access at least 10 TB of historical data

Process files that are regularly uploaded by users' mobile devices

Executive Statement

Our last successful game did not scale well with our previous cloud provider, resulting 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 game to target users.

Additionally, 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.

For this question, refer to the Mountkirk Games case study. You need to analyze and define the technical architecture for the database workloads for your company, Mountkirk Games.
Considering the business and technical requirements, what should you do?

D. Use Cloud Bigtable for time series data, use Cloud Spanner for transactional data, and use BigQuery for historical data queries.
Answer: D

요구사항 : 클라우드 업체와 확장이 진행되지 않아 채택률이 낮아지고 게임 평판에 영향을 미치고 있습니다. 투자자들은 게임의 속도와 안정성을 평가하기 위해 더 많은 핵심 성과 지표(KPI)는 물론, 사용자를 대상으로 게임을 조정할 수 있도록 사용 패턴에 대한 더 깊은 통찰력을 제공하는 기타 지표를 원합니다. 또한 현재 기술 스택은 필요한 규모를 제공 할 수 없으므로 MySQL 을 대체하고 자동 확장, 낮은 지연로드 밸런싱을 제공하고 물리적 서버 관리에서 해방되는 환경으로 변경하고자 합니다. Mountkirk Games 의 데이터베이스 워크로드에 대한 기술 아키텍처를 분석하고 정의해야 한다. 비즈니스 및 기술 요구 사항을 고려하여 어떻게 해야 하는가?

해결방법 : D. 시계열 데이터에는 Cloud Bigtable 을 사용하고 트랜잭션 데이터에는 Cloud Spanner 를 사용하고 기록 데이터 쿼리에는 BigQuery 를 사용합니다.

NO.99 Case Study: 7 - Mountkirk Games
Company Overview
Mountkirk Games makes online, session-based, multiplayer games for mobile platforms. They build all of their games using some server-side integration. Historically, they have used cloud providers to lease physical servers.
Due to the unexpected popularity of some of their games, they have had problems scaling their global audience, application servers, MySQL databases, and analytics tools.
Their current model is to write game statistics to files and send them through an ETL tool

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.

Business Requirements

Increase to a global footprint.

Improve uptime - downtime is loss of players. Increase efficiency of the cloud resources we use. Reduce latency to all customers.

Technical Requirements

Requirements for Game Backend Platform

Dynamically scale up or down based on game activity.

Connect to a transactional database service to manage user profiles and game state.

Store game activity in a timeseries database service for future analysis.

As the system scales, ensure that data is not lost due to processing backlogs.

Run hardened Linux distro.

Requirements for Game Analytics Platform

Dynamically scale up or down based on game activity

Process incoming data on the fly directly from the game servers

Process data that arrives late because of slow mobile networks

Allow queries to access at least 10 TB of historical data

Process files that are regularly uploaded by users' mobile devices

Executive Statement

Our last successful game did not scale well with our previous cloud provider, resulting 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 game to target users.

Additionally, 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

For this question, refer to the Mountkirk Games case study. Which managed storage option meets Mountkirk's technical requirement for storing game activity in a time series database service?

A. Cloud Bigtable
Answer: A

요구사항 : 시계열 데이터베이스 서비스에서 게임 활동을 저장하기 위한 Mountkirk 의 기술적 요구 사항을 충족하는 관리형 스토리지 옵션은 무엇입니까?

해결방법 : **A.** Cloud Bigtable

NO.100 Your customer support tool logs all email and chat conversations to Cloud Bigtable for retention and analysis. What is the recommended approach for sanitizing this data of personally identifiable information or payment card information before initial storage?

C. De-identify the data with the Cloud Data Loss Prevention API
Answer: C

요구사항 : 고객 지원 도구는 보존 및 분석을 위해 모든 이메일 및 채팅 대화를 Cloud Bigtable 에 기록합니다. 초기 저장 전에 개인 식별 정보 또는 결제 카드 정보의 데이터를 삭제하기 위해 권장되는 접근 방식은 무엇입니까?

해결방안 : C. Cloud Data Loss Prevention API 를 사용하여 데이터 익명화

NO.101 You are using Cloud Shell and need to install a custom utility for use in a few weeks. Where can you store the file so it is in the default execution path and persists across sessions?

A. ~/bin

요구 사항 : 몇 주 후에 사용할 수 있도록 사용자 지정 유틸리티를 설치해야한다. 파일이 기본 실행 경로에 있고 세션 간에 유지되도록 파일을 저장할 수 있는 위치는?

해결 방법 : ~/bin

NO.102 You want to create a private connection between your instances on Compute Engine and your on- premises data center. You require a connection of at least 20 Gbps. You want to follow Google- recommended practices. How should you set up the connection?

A. Create a VPC and connect it to your on-premises data center using Dedicated Interconnect.

요구 사항 : 컴퓨팅 엔진 인스턴스와 사내 데이터센터간 개인 연결 생성하려는 경우?

해결 방법 : 전용 인커넥트사용, VPC 생성 후 사내 데이터센터에 연결

NO.103 You are analyzing and defining business processes to support your startup's trial usage of GCP, and you don't yet know what consumer demand for your product will be. Your manager requires you to minimize GCP service costs and adhere to Google best practices. What should you do?

A. Utilize free tier and sustained use discounts. Provision a staff position for service costmanagement.

요구 사항 : GCP 비용을 최소화 하고싶다. 어째야되노

해결 방법 : 프리티어 사용 및 지속적인 할인을 받아라.

NO.104 You are building a continuous deployment pipeline for a project stored in a Git source repository and want to ensure that code changes can be verified deploying to production. What should you do?

A. Use Jenkins to monitor tags in the repository. Deploy staging tags to a staging environment fortesting

요구 사항 : 깃에서 코드 관리하는데 자동 배포 되게 하고싶다.

해결 방법 : 젱킨스를 써라

NO.105 You have an outage in your Compute Engine managed instance group: all instance keep restarting after 5 seconds. You have a health check configured, but autoscaling is disabled. Your colleague, who is a Linux expert, offered to look into the issue. You need to make sure that he can access the VMs. What should you do?

A. Disable the health check for the instance group. Add his SSH key to the project-wide SSH keys

요구 사항 : 운영 중단이 발생한 경우? 모든 인스턴스가 5 초 후에도 계속 다시 시작됨. 상태 점검이 구성되어 있지만 자동 스케일링이 비활성화 되어있는 경우?

해결 방안 : 인스턴스 그룹에 대한 상태 검사를 실행중지해라

Tip : 문제에 autoscaling 있다고 답에도 autoscaling 찍으면 안됨

NO.107 Your company has multiple on-premises systems that serve as sources for reporting. The data has not been maintained well and has become degraded over time. You want to use Google recommended practices to detect anomalies in your company data. What should you do?

A. Upload your files into Cloud Storage. Use Cloud Dataprep to explore and clean your data.

요구 사항 : 여러 사내 시스템을 보유하고있는데 데이터가 잘 유지되지않아 갈수록 성능저하됨

해결 방안 : 파일을 클라우드 스토리지에 업로드하고 cloud dataprep 사용해서 데이터 탐색하고정리해라

NO.108 Google Cloud Platform resources are managed hierarchically using organization, folders, and projects. When Cloud Identity and Access Management (IAM) policies exist at these different levels, what is the effective policy at a particular node of the hierarchy?

C. The effective policy is the union of the policy set at the node and policies inherited from its ancestors

요구 사항 : 구글 클라우드 플랫폼은 계층적으로 관리된다. IAM 정책이 서로 다른 레벨에 존재하는 경우 특정 노드에서 유효한 정책은?

해결 방안 : 유니온이다.

NO.110 You have found an error in your App Engine application caused by missing Cloud Datastore indexes. You have created a YAML file with the required indexes and want to deploy these new indexes to Cloud Datastore. What should you do?

A. Point gcloud datastore create-indexes to your configuration file

요구 사항 : 클라우드 데이터스토어 인덱스누락으로 에러. 인덱스포함 YAML 파일 생성했고 데이터스토어에 배포할라함.

해결 방안 : 포인트 gcloud 데이터스토어 생성-구성 파일에 대한 인덱스 생성

NO.111 You have an application that will run on Compute Engine. You need to design an architecture that takes into account a disaster recovery plan that requires your application to fail over to another region in case of a regional outage. What should you do?
C. Deploy the application on two Compute Engine instance groups, each in the same project but in a different region. Use the first instance group to serve traffic, and use the HTTP load balancing service to fail over to the standby instance group in case of a disaster.

요구사항 : 아키텍처 설계(지역 운영 중단 시 애플리케이션을 다른 지역으로 failover 하는 재해 복구 계획을 고려해야함)

해결방법 : 동일한 프로젝트에 있지만 다른 지역에 있는 두 개의 컴퓨팅 엔진 인스턴스 그룹에 애플리케이션을 배포한다. 첫번째 인스턴스 그룹을 사용하여 트래픽을 지원하고, HTTP 로드 밸런싱 서비스를 사용하여 재해 발생 시 대기 인스턴스 그룹을 failover 한다.

NO.112 You are deploying an application on App Engine that needs to integrate with an on-premises database. For security purposes, your on-premises database must not be accessible through the public Internet.
What should you do?
D. Deploy your application on App Engine flexible environment and use Cloud VPN to limit access to the on-premises database.

요구사항 : 사내 데이터베이스와 통합해야 하는 애플리케이션을 앱 엔진에 배포하는 경우, 보안을 위해 사내 데이터베이스는 공용 인터넷을 통해 접속할 수 없게 해야 한다. 어떻게 해야 하는가

해결방법 : 애플리케이션을 앱 엔진의 유연한 환경에 배포하고 Clolud VPN 을 사용하여 사내 데이터베이스에 대한 액세스를 제한한다.

NO.113 You are working in a highly secured environment where public Internet access from the Compute Engine VMs is not allowed. You do not yet have a VPN connection to access an on-premises file server. You need to install specific software on a Compute Engine instance. How should you install the software?
A. Upload the required installation files to Cloud Storage. Configure the VM on a subnet with a Private Google Access subnet. Assign only an internal IP address to the VM. Download the installation files to the VM using gsutil.

요구사항 : 컴퓨팅 엔진 vm 으로부터 공용 인터넷 엑세스가 허용되지 않는 안전한 환경에서 작업하고 있다. 사내 파일 서버에 엑세스하기 위한 VPN 연결이 아직 없는 경우, 컴퓨터 엔진 인스턴스에 특정 소프트웨어를 어떻게 설치해야 하는가)

해결방법 : 필요한 설치 파일을 클라우드 저장소에 업로드한다. 개인 구글 엑세스 서브넷이 있는 서브넷에 VM 을 구성한다. 내부 ip 주소만 VM 에 할당한다. Gsutil 을 사용하여 설치 파일을 VM 에 다운로드한다.

NO.114 Your company is moving 75 TB of data into Google Cloud. You want to use Cloud Storage and follow Google-recommended practices. What should you do?
C. Install gsutil on each server that contains data. Use resumable transfers to upload the data into Cloud Storage.

요구사항 : 75TB 데이터를 구글 클라우드로 이동시키고 있다. 클라우드 저장소를 사용하고 구글 권장 사례를 따르고 싶다. 어떻게 해야 하는가
해결방법 : 데이터를 포함하는 각 서버에 gsutil 을 설치한다. 다시 시작할 수 있는 전송을 사용하여 데이터를 클라우드 저장소에 업로드한다.

NO.115 You have an application deployed on Kubernetes Engine using a Deployment named echodeployment. The deployment is exposed using a Service called echo-service. You need to perform an update to the application with minimal downtime to the application. What should you do?
B. Use the rolling update functionality of the Instance Group behind the Kubernetes cluster

요구사항 : echodeployment 라는 배포를 사용하여 쿠버네티스 엔진에 배포된 애플리케이션을 가지고 있다. 배포는 에코 서비스라는 서비스를 사용하여 노출된다. 애플리케이션 다운타임(시스템을 이용할 수 없는 시간)을 최소화하면서 애플리케이션을 업데이트하려면 어떻게 해야 하는가
해결방법 : 쿠버네티스 클러스터 뒤에 있는 인스턴스 그룹의 롤링 업데이트 기능 사용

NO.116 Your company is using BigQuery as its enterprise data warehouse. Data is distributed over several Google Cloud projects. All queries on BigQuery need to be billed on a single project. You want to make sure that no query costs are incurred on the projects that contain the data. Users should be able to query the datasets, but not edit them. How should you configure users' access roles?
C. Add all users to a group. Grant the group the roles of BigQuery jobUser on the billing project and BigQuery dataViewer on the projects that contain the data.

요구사항 : 기업 데이터 웨어하우스로 빅쿼리를 사용하고 있다. 데이터는 여러 구글 클라우드 프로젝트에 분산되어 있다. 빅쿼리에 대한 모든 질의는 단일 프로젝트에 청구되어야 한다. 데이터가 포함된 프로젝트에서 쿼리 비용이 발생하지 않도록 하려는 경우, 사용자는 데이터셋을 쿼리할 수 있지만, 편집할 수는 없다. 사용자의 엑세스 역할을 어떻게 구성해야 하는가
해결방법 : 그룹에 모든 사용자를 추가한다. 그룹에 청구 프로젝트에서 빅쿼리 jobUser 의 역할을 부여하고 데이터가 포함된 프로젝트에서 빅쿼리 dataViewer 의 역할을 부여한다.

NO.117 You have developed an application using Cloud ML Engine that recognizes famous paintings from uploaded images. You want to test the application and allow specific people to upload images for the next 24 hours. Not all users have a Google Account. How should you have users upload images?
B. Have users upload the images to Cloud Storage using a signed URL that expires after 24 hours.

요구사항 : Cloud ML 엔진을 이용하여 업로드된 이미지에서 명화를 인식하는 애플리케이션을 개발하였다. 응용프로그램을 테스트하고 특정 사용자가 다음 24 시간 동안 이미지를 업로드하도록 허용하려고 한다. 사용자가 이미지를 업로드하도록 하려면 어떻게 해야 하는가

해결방법 : 사용자가 24 시간 후에 만료되는 서명된 URL 을 사용하여 이미지를 Cloud Storage 에 업로드하도록 한다.

NO.118 Your web application must comply with the requirements of the European Union's General Data Protection Regulation (GDPR). You are responsible for the technical architecture of your web application. What should you do?
D. Define a design for the security of data in your web application that meets GDPR requirements.

요구사항 : 웹 애플리케이션 아키텍처(웹 애플리케이션은 GDPR 의 요구사항을 준수해야 한다.)

해결방법 : GDPR 요건을 충족하는 웹 애플리케이션의 데이터 보안을 위한 설계를 정의한다.

NO.119 You need to set up Microsoft SQL Server on GCP. Management requires that there's no downtime in case of a data center outage in any of the zones within a GCP region. What should you do?
C. Set up SQL Server on Compute Engine, using Always On Availability Groups using Windows Failover Clustering. Place nodes in different subnets.

요구사항 : GCP 에 마이크로 소프트 SQL Server 를 설정해야 한다. GCP 영역 내의 모든 영역에서 데이터 센터가 중단되는 경우, 다운타임이 발생하지 않아야 한다. 어떻게 해야 하는가

해결방법 : Windows Failover Clustering 을 사용하여 Always On 가용성 그룹을 사용하여 컴퓨팅 엔진에 SQL Server 를 설정한다. 노드를 다른 서브넷에 배치한다.

NO.120 The development team has provided you with a Kubernetes Deployment file. You have no infrastructure yet and need to deploy the application. What should you do?
B. Use gcloud to create a Kubernetes cluster. Use kubectl to create the deployment.

요구사항 : 애플리케이션 배포(아직 인프라가 없지만 쿠버네티스 배치 파일은 갖고 있는 상태)

해결방법 : gcloud 를 사용하여 쿠버네티스 클러스터를 생성한다. 배치를 만드려면 kubectel 을 사용한다.

=