NO.121 You need to evaluate your team readiness for a new GCP project. You must perform the evaluation and create a skills gap plan incorporates the business goal of cost optimization. Your team has deployed two GCP projects successfully to date. What should you do?

A. Allocate budget for team training. Set a deadline for the new GCP project.
Answer: A

요구사항 : GCP 프로젝트에 대한 팀 준비 상태를 평가할 때 비용 최적화를 위한 기술격차 계획을 작성해야합니다. 현재까지 두 개의 GCP 프로젝트를 성공적으로 배포했습니다. 어떻게해야 합니까?

해결방법 : 팀 교육을위한 예산을 할당하고 새 GCP 프로젝트의 기한을 설정합니다.

NO.122 You are designing an application for use only during business hours. For the minimum viable product release, you'd like to use a managed product that automatically "scales to zero" so you don't incur costs when there is no activity. Which primary compute resource should you choose?

A. Cloud Functions
Answer: A

Explanation:
Remember that Cloud Functions is serverless and scales from zero to scale and back to zero as the demand changes.

요구사항 : 업무시간에만 사용 가능한 응용프로그램을 디자인하고 있습니다. 최소 실행 가능한 제품 릴리스를 위해 활동이 없는경우에는 비용이 발생하지 않은 “제로 스케일”로 자동 관리되는 제품을 사용하려고 한다. 어떤 리소스를 사용해야 될까요?

해결 방법 : Cloud Functions
Cloud Functions은 기존 서버에 의존하지 않고 0에서 수요에 따라 확장되며 수요가 변하면 다시 0으로 돌아온다.

NO.123 You are creating an App Engine application that uses Cloud Datastore as its persistence layer. You need to retrieve several root entities for which you have the identifiers. You want to minimize the overhead in operations performed by Cloud Datastore. What should you do?

A. Create the Key object for each Entity and run a batch get operation
Answer: A

요구사항 : Cloud Datastore에서 식별자가 있는 루트 엔터티를 검색하려고 할 때 작업의 오버헤드를 최소화 하기 위해서 어떻게 해야 합니까?

해결방법 : 각 엔터티에 대한 Key 개체를 만들고 일괄 가져 오기 작업을 실행합니다.

NO.124 You need to upload files from your on-premises environment to Cloud Storage. You want the files to be encrypted on Cloud Storage using customer-supplied encryption keys. What should you do?

A. Supply the encryption key in a .boto configuration file. Use gsutil to upload the files.
Answer: A

요구사항 : 온 프레미스 환경에서 Cloud Storage로 파일을 업로드해야합니다. 고객 제공 암호화 키를 사용하여 Cloud Storage에서 파일을 암호화하려고합니다. 어떻게해야합니까?

해결방법 : boto 구성 파일에 암호화 키를 제공하고 gsutil을 사용하여 파일을 업로드합니다.

NO.125 You are using a single Cloud SQL instance to serve your application from a specific zone. You want to introduce high availability. What should you do?

D. Create a failover replica instance in the same region, but in a different zone
Answer: D

요구사항 : 단일 Cloud SQL 인스턴스를 사용하여 특정 영역에서 애플리케이션을 제공하고 있습니다. 높은 가용성을 도입하려고 할 때 어떻게 해야합니까?

해결 방법 : 같은 지역, 다른 영역에 장애 조치를 위한 복제 인스턴스를 생성합니다.

NO.126 Your company is running a stateless application on a Compute Engine instance. The application is used heavily during regular business hours and lightly outside of business hours. Users are reporting that the application is slow during peak hours. You need to optimize the application's performance. What should you do?

C. Create a custom image from the existing disk. Create an instance template from the custom image. Create an autoscaled managed instance group from the instance template.
Answer: C

요구사항 : Compute Engine 인스턴스에서 상태를 저장하지 않는 애플리케이션을 실행하고 있습니다. 이 응용 프로그램은 정규 업무 시간 동안 많이 사용될 때 사용량이 많은 시간에 애플리케이션이 느리다고 보고합니다. 응용 프로그램의 성능을 최적화하기 위해 어떻게 해야합니까?

해결방법 : 기존 디스크에서 사용자 지정 이미지를 만듭니다. 커스텀 이미지에서 인스턴스 템플릿을 만들고 인스턴스 템플릿에서 자동으로 확장되는 관리형 인스턴스 그룹을 만듭니다.

NO.127 Your web application has several VM instances running within a VPC. You want to restrict communications between instances to only the paths and ports you authorize, but you don't want to rely on static IP addresses or subnets because the app can autoscale. How should you restrict communications?

B. Use firewall rules based on network tags attached to the compute instances
Answer: B

요구사항 : 웹 애플리케이션에는 VPC 내에서 실행되는 여러 VM 인스턴스가 있습니다. 인스턴스 간 통신을 승인 한 경로와 포트로만 제한하고 싶지만 앱이 자동 확장 될 수 있으므로 고정 IP 주소 또는 서브넷에 의존하고 싶지 않습니다. 커뮤니케이션을 어떻게 제한해야합니까?

해결방법 : 컴퓨팅 인스턴스에 연결된 네트워크 태그를 기반으로 방화벽 규칙 사용합니다.

NO.128 You are using Cloud SQL as the database backend for a large CRM deployment. You want to scale as usage increases and ensure that you don't run out of storage, maintain 75% CPU usage cores, and keep replication lag below 60 seconds. What are the correct steps to meet your requirements?

A. 1. Enable automatic storage increase for the instance.
2. Create a Stackdriver alert when CPU usage exceeds 75%, and change the instance type to reduce CPU usage.
3. Create a Stackdriver alert for replication lag, and shard the database to reduce replication
Answer: A

요구사항 : Cloud SQL에서 사용량이 증가함에 따라 확장하고 스토리지 부족을 방지하고 CPU 사용량 코어를 75 % 유지하며 복제 지연을 60 초 미만으로 유지하려고합니다. 요구 사항을 충족하기위한 올바른 단계는 무엇입니까?

해결 방법 :
1. 인스턴스에 대한 자동 스토리지 증가를 활성화합니다.
2. CPU 사용량이 75 %를 초과하면 Stackdriver 알림을 만들고 인스턴스 유형을 변경합니다.
3. 복제 지연에 대한 Stackdriver 알림을 만들고 데이터베이스를 분할하여 복제를 줄입니다.

NO.129 You are tasked with building an online analytical processing (OLAP) marketing analytics and reporting tool. This requires a relational database that can operate on hundreds of terabytes of data. What is the Google- recommended tool for such applications?

D. BigQuery, because it is designed for large-scale processing of tabular data
Answer: D

요구 사항 : 온라인 분석 처리 (OLAP) 마케팅의 분석 및 보고 도구를 구축을 위해 수백 테라 바이트의 데이터에서 작동 할 수있는 관계형 데이터베이스가 필요합니다. 이때 Google에서 권장하는 도구는 무엇입니까?

해결방법 : BigQuery
테이블 형식 데이터의 대규모 처리를 위해 설계 되었기 때문입니다.또한 BigQuery는 관계형 데이터베이스이며 OLAP를 지원합니다.

NO.130 You have deployed an application to Kubernetes Engine, and are using the Cloud SQL proxy container to make the Cloud SQL database available to the services running on Kubernetes. You are notified that the application is reporting database connection issues. Your company policies require a post-mortem. What should you do?

C. In the GCP Console, navigate to Stackdriver Logging. Consult logs for Kubernetes Engine and Cloud SQL.
Answer: C

요구사항 : Kubernetes Engine에 애플리케이션을 배포했으며 Cloud SQL 프록시 컨테이너를 사용하여 Kubernetes에서 실행되는 서비스에서 Cloud SQL 데이터베이스를 사용할 수 있습니다. 애플리케이션이 데이터베이스 연결 문제를보고하고 있다는 알림을받습니다. 회사 정책에는 사후 분석이 필요합니다. 어떻게해야합니까?

해결방법 : GCP 콘솔에서 Stackdriver Logging으로 이동하여 Kubernetes Engine 및 Cloud SQL에 대한 로그를 참조할 수 있습니다.

NO.131 Your company pushes batches of sensitive transaction data from its application server VMs to Cloud Pub/ Sub for processing and storage. What is the Google-recommended way for your application to authenticate to the required Google Cloud services?
A. Ensure that VM service accounts are granted the appropriate Cloud Pub/Sub IAM roles.

요구사항 : 처리 및 스토리지를 위해 애플리케이션 서버 VM에서 Cloud Pub/Sub로 중요한 트랜잭션 데이터 묶음을 전송한다. 이때 구글 클라우드 서비스에 대한 인증을 위한 방법은?

해결방법 : VM 서비스 계정에 적절한 Cloud Pub/Sub IAM 역할이 부여되었는지 확인한다. 서비스 계정은 액세스 범위와 서비스 계정의 특정 IAM 역할 모두에서 허용되는 API 메서드만 실행할 수 있기 때문에 적절한 역할이 부여되었는지 확인해야한다.

NO.132 You want to establish a Compute Engine application in a single VPC across two regions. The application must communicate over VPN to an on-premises network. How should you deploy the VPN?
D. Deploy Cloud VPN Gateway in each region. Ensure that each region has at least one VPN tunnel to the on-premises peer gateway.

요구사항 : VPN 배포(두 지역에 걸쳐 하나의 VPC에 컴퓨팅 엔진 애플리케이션을 설정할 때 애플리케이션은 반드시 VPN을 통해 사내 네트워크에 통신해야 한다.)

해결방법 : 각 지역에 클라우드 VPN 게이트웨이를 배포한다. 각 영역에 온프레미스 피어 게이트웨이로 연결되는 VPN 터널이 하나 이상 있는지 확인한다.
설명 – VPC 피어링과 Shared VPC를 사용하면 온프레미스 시스템에 접속할 수 없으므로 A, B는 답에서 제외.
global Cloud VPN Gateway라는 것이 존재하지 않기 때문에 C는 답에서 제외.
Refer - https://cloud.google.com/vpn/docs/how-to/creating-static-vpns
정답은 HA VPN을 사용하여 단일 지역의 IPsec VPN 연결을 통해 사내 네트워크를 안전하게 연결할 수 있다.

HA VPN은 터널을 2개로 생성하여 하나의 터널에 장애가 발생하여도 나머지 터널을 통하여 서비스를 지속시킬 수 있다.

NO.133 Your applications will be writing their logs to BigQuery for analysis. Each application should have its own table. Any logs older than 45 days should be removed. You want to optimize storage and follow Google- recommended practices. What should you do?
B. Make the tables time-partitioned, and configure the partition expiration at 45 days.

요구사항 : 애플리케이션은 분석을 위해 빅쿼리에 로그를 작성할 것이다. 각 애플리케이션에는 자체 테이블이 있어야 한다. 45일 이상 경과한 로그는 모두 제거해야 한다.
스토리지를 최적화하고 구글 권장 사례를 따라야한다. 어떻게 해야 하는가

해결방법 : 테이블의 시간을 분할하고 파티션 만료를 45일로 구성한다.
tables time-partitioned은 45일 후에 데이터를 만료시켜 오버헤드를 최소화할 수 있는 최적의 솔루션이다.

NO.134 Your company is migrating its on-premises data center into the cloud. As part of the migration, you want to integrate Kubernetes Engine for workload orchestration. Parts of your architecture must also be PCI DSS- compliant. Which of the following is most accurate?
C. Kubernetes Engine and GCP provide the tools you need to build a PCI DSS-compliant environment.

요구사항 : 마이그레이션 중 Kubernetes Engine을 통합할 때 PCI DSS와 호환되어야 한다.
다음 중 옳은 것은?

해결방법 : Kubernetes Engine 및 GCP는 PCI DSS 호환 환경을 구축하는 데 필요한 도구를 제공한다.

NO.135 Your company processes high volumes of IoT data that are time-stamped. The total data volume can be several petabytes. The data needs to be written and changed at a high speed. You want to use the most performant storage option for your data.
C. Cloud Bigtable

요구사항 : 시간작업이 포함된 대량의 데이터를 빈번하고 빠르게 처리하는데 가장 뛰어난 스토리지 옵션은 무엇인가?

해결방법 :
A : 타임스탬프 기반 쿼리나 잦은 데이터 쓰기에 적절하지 않음.
B : 해당 유형의 데이터가 아닌 객체 스토리지용이기 때문에 적절하지 않음.
C : IoT 및 시간 작업에 가장 성능이 뛰어남.
D : 데이터 저장은 가능하나, 변경 속도가 매우 느리기 때문에 적절하지 않음.

NO.136 You are migrating your on-premises solution to Google Cloud in several phases. You will use Cloud VPN to maintain a connection between your on-premises systems and Google Cloud until the migration is completed. You want to make sure all your on-premises systems remain reachable during this period. How should you organize your networking in Google Cloud?

D. Use an IP range on Google Cloud that does not overlap with the range you use on-premises for your primary IP range and use a secondary range with the same IP range as you use on- premises

요구사항 : 기존에 사용하던 온프레미스 솔루션을 Google Cloud로 이전하려고 할 때, 네트워킹 구성에 대하나 설명으로 옳은 것은?

해결방법 : Google Cloud는 기본 IP 범위로 온프레미스에서 사용하는 범위와 겹치치 않는 IP를 사용하고, 온프레미스에서 사용하는 것과 동일한 IP 범위를 보조 범위로 사용한다.

NO.137 Your customer wants to capture multiple GBs of aggregate real-time key performance indicators (KPIs) from their game servers running on Google Cloud Platform and monitor the KPIs with low latency. How should they capture the KPIs?

A. Store time-series data from the game servers in Google Bigtable, and view it using Google Data Studio.

요구사항 : 고객은 Google Cloud Platform에서 실행되는 게임 서버에서 여러 GB의 총 KPI(실시간 핵심 성과 지표)를 캡처하고 짧은 대기 시간으로 KPI를 모니터링하고자 한다. KPI를 어떻게 캡처해야 하는가

해결방법 : 게임 서버의 시계열 데이터를 Google Bigtable에 저장하고 Google Data Studio를 사용하여 본다.
Google Bigtable은 데이터 밀도가 낮은 테이블로, 매우 낮은 지연 시간으로 많은 양의 단일 키 입력 데이터를 저장하는 데 적합하다.

NO.138 You have a Python web application with many dependencies that requires 0.1 CPU cores and 128 MB of memory to operate in production. You want to monitor and maximize machine utilization. You also to reliably deploy new versions of the application. Which set of steps should you take?
C. Perform the following:
1. Create a Kubernetes Engine cluster with n1-standard-1 type machines.
2. Build a Docker image from the production branch with all of the dependencies, and tag it with the version number.
3. Create a Kubernetes Deployment with the imagePullPolicy set to "IfNotPresent" in the staging namespace, and then promote it to the production namespace after testing.

요구사항 : 운영 환경에서 작동하기 위해 0.1 CPU 코어와 128MB의 메모리를 필요로 하는 많은 종속성을 가진 Python 웹 애플리케이션이 있다. 시스템 활용률을 모니터링하고 최대화하고자 하고 애플리케이션의 새 버전을 안정적으로 배포해야 한다. 어떤 단계를 밟아야 하는가
해결방법 : 1. n1-standard-1 타입 머신으로 쿠버네티스 엔진 클러스터를 생성한다.
2. 모든 종속성을 사용하여 프로덕션 분기에서 도커 이미지를 작성하고 버전 번호로 태그를 지정한다.

3. 네임스페이스에서 imagePullPolicy가 "IfNotPresent"로 설정된 Kubernetes Deployment를 만든 다음 테스트 후 프로덕션 네임스페이스로 승격한다.
쿠버네티스 클러스터에는 원하는 상태를 설정할 수 있다. 실행해야 할 애플리케이션이나 워크로드, 사용하는 이미지, 사용할 수 있는 리소스 등과 같은 기타 구성 세부 사항을 정의할 수 있다.

NO.139 Your company wants to start using Google Cloud resources but wants to retain their onpremises Active Directory domain controller for identity management. What should you do?

B. Use Google Cloud Directory Sync to synchronize Active Directory usernames with cloud identities and configure SAML SSO.

요구사항 : 귀사는 Google 클라우드 리소스를 사용하기 시작하려고 하지만 ID 관리를 위해 사내 Active Directory 도메인 컨트롤러를 유지하려고 한다. 이때 어떻게 해야 하는가

해결방법 : Google Cloud Directory Sync를 사용하여 Active Directory 사용자 이름을 클라우드 ID와 동기화하고 SAML SSO를 구성한다.
GCDS는 구글 계정의 데이터를 마이크로 소프트 액티브 디렉토리 또는 LDAP 서버와 동기화할 수 있다.

NO.140 You are running a cluster on Kubernetes Engine to serve a web application. Users are reporting that a specific part of the application is not responding anymore. You notice that all pods of your deployment keep restarting after 2 seconds. The application writes logs to standard output. You want to inspect the logs to find the cause of the issue. Which approach can you take?

C. Connect to the cluster using gcloud credentials and connect to a container in one of the pods to read the logs.

요구사항 : 귀하는 웹 애플리케이션을 제공하기 위해 쿠버네티스 엔진에서 클러스터를 실행하고 있다. 응용 프로그램의 특정 부분이 더 이상 응답하지 않는다고 사용자가 보고한다. 배포의 모든 포드가 2초 후에도 계속 다시 시작된다. 응용 프로그램은 로그를 표준 출력에 쓴다. 로그를 검사하여 문제의 원인을 찾으려고 한다. 어떤 접근법을 취할 수 있는가?

해결방법 : 자격 증명을 사용하여 클러스터에 연결하고 포드 중 하나에 있는 컨테이너에 연결하여 로그를 읽는다. 애플리케이션 로그는 문제를 디버깅하고 클러스터 활동을 모니터링하는 데 유용하다. 쿠버네티스에서 로깅은 일부 테스트를 초당 한 번씩 표준 출력에 쓰는 컨테이너와 함께 포드 명세를 사용한다.

NO.141 You need to develop procedures to verify resilience of disaster recovery for remote recovery using GCP. Your production environment is hosted on-premises. You need to establish a secure, redundant connection between your on premises network and the GCP network.
What should you do?

요구사항 : 원격 복구를 위해 gcp를 사용하면서 재해 복구 복원력을 검증하는 절차를 개발해야 함. 사내 네트워크와 gcp네트워크 간의 중복연결하면서 보안망을 구축해야 할 때 어떻게 해야하는지?

A. Verify that Dedicated Interconnect can replicate files to GCP. Verify that direct peering can establish a secure connection between your networks if Dedicated Interconnect fails.
(Dedicated Interconnect가 파일을 GCP에 복제 할 수 있는지 확인한다. 직접 피어링이 Dedicated Interconnect가 실패 할 경우 네트워크간에 보안 연결을 설정한다)
Answer: A

NO.142 Your company operates nationally and plans to use GCP for multiple batch workloads, including some that are not time-critical. You also need to use GCP services that are HIPAA-certified and manage service costs. How should you design to meet Google best practices?

요구사항 : 시간적으로 중요하지 않은 것들도 포함하여 여러 일괄 작업 부하에 gcp를 사용할 계획이다. 또한 HIPAA 인증 GCP 서비스를 사용하고 서비스 비용을 관리해야 할 때 google 권장 사항을 충족하려면 어떻게 설계해야 하는지?

B. Provisioning preemptible VMs to reduce cost. Disable and then discontinue use of all GCP and APIs that are not HIPAA-compliant.
(비용을 줄이기 위해 선점형vm을 프로비저닝한다. HIPAA를 준수하지 않는 경우 모든 GCP 및 API 사용을 비활성화했다가 중단한다.)
Answer: B

- 프로비저닝 : 프로비저닝은 사용자의 요구에 맞게 시스템 자원을 할당, 배치, 배포해 두었다가 필요 시 시스템을 즉시 사용할 수 있는 상태로 미리 준비해 두는 것을 말한다.
- 많은 의료 서비스 제공자, 보험사 및 IT 전문가가 AWS의 유틸리티 기반 클라우드 서비스를 사용하여 개인 건강 정보(PHI)를 처리, 저장 및 전송하고 있으며, 그 수는 계속 늘어나고 있습니다. AWS는 HIPAA(1996년 미국 의료 정보 보호법)에 따라 대상 엔터티 및 비즈니스 관련자가 안전한 AWS 환경을 사용하여 개인 건강 정보를 처리, 유지 관리 및 저장할 수 있도록 지원합니다.
- HIPAA : HIPAA(미국 의료 정보 보호법)는 1996년에 제정되었으며, 미국 근로자가 직장을 옮기거나 잃었을 때 의료 보험을 좀 더 쉽게 유지할 수 있도록 고안되었습니다. 또한, 전자 의료 레코드를 장려하여 개선된 정보 공유를 통해 미국 의료 서비스 시스템의 효율성과 품질을 높이고자 제정되었습니다.

NO.143 Your customer wants to do resilience testing of their authentication layer. This consists of a regional managed instance group serving a public REST API that reads from and writes to a Cloud SQL instance. What should you do?

요구사항 : 고객은 인증 계층의 복원력 테스트를 수행하길 원한다. 클라우드 SQL 인스턴스에서 읽고 쓰는 공용 REST API를 제공하는 지역 관리 인스턴스 그룹으로 구성될 때 어떻게 해야하나?

D. Configure a red replica for your Cloud SQL instance in a different zone than the master, and then
manually trigger a failover while monitoring KPIs for our REST API.
(마스터와 다른 영역에서 Cloud SQL 인스턴스의 빨간색 복제본을 구성한 다음 REST API에 대한 KPI를 모니터링하는 동안 수동으로 장애 조치를 트리거합니다.)
Answer: D

Explanation:
Resilience testing is a crucial step in ensuring applications perform well in real-life conditions. It is part of the non-functional sector of software testing that also .
(복원력 테스트는 애플리케이션이 실제 조건에서 잘 작동하는지 확인하는 데 중요한 단계이다. 은 또한 소프트웨어 테스트의 비 기능적 부문의 일부분이다)

NO.144 Your BigQuery project has several users. For audit purposes, you need to see how many queries each user ran in the last month.
요구사항 : BigQuery 프로젝트에는 여러 사용자가 있다. 감사 목적을 위해서는 각 사용자가 지난 달에 실행한 쿼리 수를 확인해야 한다.

D. Use Cloud Audit Logging to view Cloud Audit Logs, and create a filter on the query operation to get the required information.
(클라우드 감사 기록을 사용하여 클라우드 감사 로그를 보고 쿼리 작업에 대한 필터를 생성하여 필요한 정보가져온다.)

BigQuery : 대용량 database를 대화식으로 분석할 수 있는 웹서비스
- 클라우드 서비스로 설치/운영이 필요없음
- sql언어 사용
- 클라우드 스케일의 인프라를 활용한 대용량 지원과 빠른 성능
- 데이터 복제를 통한 안정성(3개의 복제본이 서로 다른 데이터 센터에 분산되어 저장되기 때문에 데이터에 대한 유실 위험 적음)
- 배치와 스트리밍 모두 지원 (한꺼번에 데이터를 로딩하는 배치 외에, 실시간으로 데이터를 입력할 수 있는 스트리밍 기능제공
- 비용 저렴
- Job : 향후 감사 등의 목적을 위해 로그를 남김

Answer: D
Explanation:
https://cloud.google.com/bigquery/docs/access-control

NO.145 You want to automate the creation of a managed instance group and a startup script to install the OS package dependencies. You want to minimize the startup time for VMs in the instance group. What should you do?
요구사항 : OS 패키지 종속성을 설치하기 위해 관리 인스턴스 그룹 및 시작 스크립트의 생성을 자동화하려 한다. 인스턴스 그룹의 VM 시작 시간을 최소화하려는 경우 어떻게 해야하나 ?

B. Create a custom VM image with all OS package dependencies. Use Deployment Manager to create the managed instance group with the VM image.
(모든 OS 패키지 종속성을 사용하여 사용자 지정 VM 이미지를 생성한다. eployment Manager를 사용하여 VM 이미지로 관리형 인스턴스 그룹을 생성한다.)
- Cloud eployment Manager : Google Cloud 리소스의 생성 및 관리를 자동화하는 인프라 배포 서비스.
Answer: B

NO.146 Your company captures all web traffic data in Google Analytics 260 and stores it in BigQuery. Each country has its own dataset. Each dataset has multiple tables. You want analysts from each country to be able to see and query only the data for their respective countries. How should you configure the access rights?
요구사항 : 각 국가의 분석가들이 해당 국가의 데이터만 보고 조회할 수 있기를 원하는 경우 액세스 권한을 어떻게 구성해야 하는가?

A. Create a group per country. Add analysts to their respective country-groups. Create a single group `all_analysts', and add all country-groups as members. Grant the `all-analysis' group the IAM role of BigQuery jobUser. Share the appropriate dataset with view access with each respective analyst
country-group.
(국가별로 그룹을 만들어서 각 국가 그룹에 분석가를 추가한다. 단일 그룹 'all_analysts'를 만들고 모든 국가 그룹을 구성원으로 추가한다. BigQuery jobUser의 IAM 역할을 '모든 분석' 그룹에 부여한다. 적절한 데이터 세트를 각 분석 국가 그룹과 뷰 액세스 권한으로 공유한다.)
Answer: A

NO.147 You have been engaged by your client to lead the migration of their application infrastructure to GCP. One of their current problems is that the on-premises high performance SAN is requiring frequent and expensive upgrades to keep up with the variety of workloads that are identified as follows: 20TB of log archives retained for legal reasons; 500 GB of VM boot/data volumes and templates; 500 GB of image thumbnails; 200 GB of customer session state data that allows customers to restart sessions even if off- line for several days.
Which of the following best reflects your recommendations for a cost-effective storage allocation?
요구사항 : 고객의 gcp로 애플리케이션 마이그레이션을 위해 고객과 계약을 체결했다. 현재 문제 중 하나는 사내 고성능 SAN이 다양한 워크로드에 보조를 맞추기 위해 빈번하고 값비싼 업그레이드를 요구한다는 점이다. 다음 중 비용 효율적인 스토리지 할당에 대한 권장 사항을 가장 잘 반영하는 것은?

B. Memcache backed by Cloud Datastore for the customer session state data. Lifecycle-managed Cloud Storage for log archives, thumbnails, and VM boot/data volumes.
(고객 세션 상태 데이터에 대해 클라우드 데이터스토어가 지원하는 Memcache. 로그 아카이브, 미리 보기 및 VM 부팅/데이터 볼륨을 위한 라이프사이클 관리 클라우드 스토리지)
Answer: B
- 워크로드 : 고객 대면 애플리케이션이나 백엔드 프로세스 같이 비즈니스 가치를 창출하는 리소스 및 코드 모음을 말합니다. 또는 주어진 기간에 시스템에 의해 실행되어야할 작업의 할당량을 의미. 워크로드는 단일 AWS 계정에서 리소스 하위 집합으로 구성되거나, 혹은 여러 AWS 계정에 적용되는 다수의 리소스 컬렉션이 될 수도 있습니다. 중소기업은 워크로드가 소수일 수 있지만 대기업에서는 워크로드가 수천 개에 이르기도 합니다.

(어려운 점 : 문제의 다양한 워크로드를 처리하기 위한 스토리지를 할당하는 것인데 잘 이해가 가지 않음)

NO.148 Your web application uses Google Kubernetes Engine to manage several workloads. One workload requires a consistent set of hostnames even after pod scaling and relaunches. Which feature of Kubernetes should you use to accomplish this?
요구사항 : 하나의 워크로드에는 포드 확장 및 재분할 후에도 일관된 호스트 이름 집합이 필요하다. 이를 위해 쿠버네티스의 어떤 특징을 사용해야 하는가 ?

A. StatefulSets
(애플리케이션의 상태를 저장하고 관리하는 데 사용되는 쿠버네티스 객체.
생성되는 포드는 영구 식별자를 가지고 상태를 유지시킬 수 있다.)
B. Role-based access control (RBAC)
(역할(Role) 기반으로 쿠버네티스 시스템의 권한을 관리 .
특정 사용자(User)와 역할(Role) 두가지를 조합하여 사용자에게 특정 권한을 부여할 수 있다.)
C. Container environment variables
(파드를 생성할 때, 파드 안에서 동작하는 컨테이너를 위한 환경 변수를 설정할 수 있다.)
D. Persistent Volumes
(관리자에 의해 생성된 볼륨)
Answer: A
- 쿠버네티스 : 컨테이너화된 워크로드와 서비스를 관리하기 위한 이식성이 있고, 확장가능한 오픈소스 플랫폼. 선언적 구성과 자동화를 모두 용이하게 해준다. 쿠버네티스는 분산 시스템을 탄력적으로 실행하기 위한 프레임 워크를 제공. 애플리케이션의 확장과 장애 조치를 처리하고, 배포 패턴 등을 제공한다.

NO.149 You are using Cloud CDN to deliver static HTTP(S) website content hosted on a Compute Engine instance group. You want to improve the cache hit ratio. What should you do?
요구사항 : cloud CDN을 사용하여 엔진 인스턴스 그룹 컴퓨터에서 호스팅되는 정적 HTTPS(S) 웹 사이트 콘텐츠를 제공하고 있다. 캐시 적중률을 개선하여고 할 때 어떻게 해야하나?
A. Customize the cache keys to omit the protocol from the key.
(캐시키를 사용자 정의하여 키에서 프로토콜을 생략한다)
Answer: A

l 맞춤 캐시 키를 사용하여 캐시 적중률 향상
- 기본적으로 Cloud CDN은 전체 요청 URL을 사용하여 캐시 키를 만듭니다. 성능과 확장성을 높이기 위해 캐시 적중률을 최적화하는 것이 중요하다. 캐시 적중률을 최적화하기 위해 커스텀 캐시 키를 사용할 수 있다.
- 프로토콜, 호스트 및 쿼리 문자열의 조합을 포함하거나 생략하도록 캐시 키를 맞춤설정할 수 있다. 예를 들어, 동일한 로고를 사용하는 두 개의 웹사이트가 서로 다른 도메인에 있다고 가정합니다. 로고를 표시하려면 다음과 같이 커스텀 캐시 키를 사용한다.
n 웹사이트 콘텐츠는 다르지만 양쪽 도메인에서 같은 회사 로고를 사용합니다. 로고가 있는 백엔드 서비스에 Cloud CDN을 사용 설정하고 캐시 키를 맞춤설정하는 경우 캐시가 도메인을 무시하지만 로고를 캐시하도록 호스트 체크박스를 선택 취소합니다.
n HTTP 또는 HTTPS를 통해 표시되는지 여부에 관계없이 로고를 캐시해야 합니다. 로고가 있는 백엔드 서비스의 캐시 키를 맞춤설정하는 경우 HTTP 및 HTTPS를 통한 요청이 로고의 캐시 항목과 일치하는 것으로 간주되도록 프로토콜 체크박스를 선택 취소합니다.
Explanation:https://cloud.google.com/cdn/docs/best-practices#using_custom_cache_keys_to_improve_cache_hit_ratio

NO.150 Your architecture calls for the centralized collection of all admin activity and VM system logs within your project. How should you collect these logs from both VMs and services?
요구사항 : 아키텍처는 프로젝트 내의 모든 관리자 활동 및 vm 시스템 로그의 중앙 집중식으로 수집해야한다. Vm과 서비스 모두에서 이러한 로그를 수집하려면?

B. Stackdriver automatically collects admin activity logs for most services.
The Stackdriver Logging agent must be installed on each instance to collect system logs.
(stackdriver는 대부분의 서비스에 대한 관리자 활동 로그를 자동으로 수집한다. Stackdriver logging시스템 로그를 수집하려면 각 인스턴스에 에이전트를 설치해야한다.)
Answer: B
Explanation:
https://cloud.google.com/logging/docs/agent/
- stackdriver
구글 클라우드에서 서비스로 제공되는 시스템 로그 및 모니터링 시스템
Cpu, 메모리사용량과 같은 하드웨어에 대한 정보에서부터 웹서버나 os와 같은 미들웨어 및 애플리케이션 로그를 수집,검색 및 분석 가능
구글 클라우드 뿐만 아니라 aws에 대한 모니터링을 통합으로도 지원

NO.151 You have an App Engine application that needs to be updated. You want to test the update with production traffic before replacing the current application version. What should you do?
요구사항 : 업데이트 전, 업데이트의 프로덕션 트래픽을 테스트 시 조치해야 할 사항은?

해결방안 :
D. Deploy the update as a new App Engine application, and use Google's global HTTP load balancing to split traffic between the new and current applications.
(업데이트를 새 App Engine 응용 프로그램으로 배포하고 Google의 글로벌 HTTP 로드 밸런싱을 사용하여 새 응용 프로그램과 현재 응용 프로그램 간에 트래픽을 분할하십시오.)

NO.152 All compute Engine instances in your VPC should be able to connect to an Active Directory server on specific ports. Any other traffic emerging from your instances is not allowed. You want to enforce this using VPC firewall rules.
How should you configure the firewall rules?
요구사항 : VPC의 모든 컴퓨팅 엔진 인스턴스는 특정 포트의 Active Directory 서버에 연결할 수 있어야 한다. 사용자 인스턴스에서 발생하는 다른 트래픽은 허용되지 않는다. 이 경우VPC 방화벽 규칙을 구성하는 방법을 선택하십시오.

해결방안 :
A. Create an egress rule with priority 1000 to deny all traffic for all instances. Create another egress rule with priority 100 to allow the Active Directory traffic for all instances.
(모든 인스턴스에 대한 모든 트래픽을 거부하는 우선 순위 1000의 송신 규칙을 만드십시오. 모든 인스턴스에 대해 Active Directory 트래픽을 허용하려면 우선 순위가 100인 다른 송신 규칙을 만드십시오.)
Answer: A

NO.153 Your customer runs a web service used by e-commerce sites to offer product recommendations to users. the company has begun experimenting with a machine learning model on Google Cloud Platform to improve the quality of results.

What should the customer do to improve their model's results over time?
요구사항 : 구글 클라우드 플랫폼에서 머신러닝 모델을 실험할 때, 모델 결과를 개선하기 위해 무엇을 해야 하는가?

해결방안 :
D. Save a history of recommendations and results of the recommendations in BigQuery, to be used as training data.
(교육 데이터로 사용할 권장 사항 기록 및 권장 사항 결과를 BigQuery에 저장하십시오.)

NO.154 A development team at your company has created a dockerized HTTPS web application. You need to deploy the application on Google Kubernetes Engine (GKE) and make sure that the application scales automatically.
How should you deploy to GKE?
요구사항 : 도커화된 HTTPS 웹 어플리케이션에서 구글 쿠버네티스 엔진(GKE)의 자동확장기능을 사용해 배포를 진행해야한다. 어떻게 GKE를 배포해야 하는가?

해결방안 :
B. Use the Horizontal Pod Autoscaler and enable cluster autoscaling on the Kubernetes cluster. Use a Service resource of type LoadBalancer to load-balance the HTTPS traffic.
(Horizontal Pod Autoscaler를 사용하여 Kubernetes cluster의 오토스케일링 기능을 활성화 합니다. 로드 밸런서로 HTTPS 트래픽을 처리합니다.)

NO.155 You need to design a solution for global load balancing based on the URL path being requested. You need to ensure operations reliability and end-to-end in-transit encryption based on Google best practices.
What should you do?
요구사항 : 운영 신뢰성과 엔드 투 엔드 전송 방식의 암호화를 보장하며 글로벌 로드 밸런싱 솔루션을 설계하려면 어떻게 해야 하는가?

해결방안 :
B. Create an HTTPS load balancer with URL maps.
(URL 맵을 사용하여 HTTPS 로드 밸런서를 생성하십시오.)

NO.156 You have an application that makes HTTP requests to Cloud Storage. Occasionally the requests fail with HTTP status codes of 5xx and 429. How should you handle these types of errors?
요구사항 : 간혹 HTTP 상태 코드가 5xx 및 429로 지정되어 요청이 실패할 때, 이러한 유형의 오류를 어떻게 처리해야 하는가?

해결방안 :
B. Implement retry logic using a truncated exponential backoff strategy.
(truncated exponential backoff strategy을 사용하여 재시도 로직을 구현한다.)

truncated exponential backoff strategy란
요청 간 지연 증가와 함께 클라이언트가 주기적으로 실패한 요청을 재시도하는 네트워크 애플리케이션의 표준 오류 처리 전략입니다.
지수 백오프 알고리즘이 재시도간 대기 시간을 최대 백오프 시간까지 늘려서 기하급수적으로 요청을 재시도합니다.
예시 :
1.Cloud Storage에 요청합니다.
2.요청이 실패하면 1초 + random_number_milliseconds를 대기한 후 요청을 재시도합니다.
3.요청이 실패하면 2초 + random_number_milliseconds를 대기한 후 요청을 재시도합니다.
4.요청이 실패하면 4초 + random_number_milliseconds를 대기한 후 요청을 재시도합니다.
5.maximum_backoff 시간까지 이를 반복합니다.
6.최대 재시도 횟수까지 계속 대기하고 재시도합니다. 그러나 재시도 간 대기 시간을 늘리지 않습니다.

NO.157 You need to develop procedures to test a disaster plan for a mission-critical application. You want to use Google-recommended practices and native capabilities within GCP. What should you do?
요구사항 : GCP 내에서 업무상 중요한 애플리케이션의 재해 계획을 테스트하는 절차는?

해결방안 :
B. Use Deployment Manager to automate provisioning. Use Stackdriver to monitor and debug your tests.
(Deployment Manager를 사용하여 대비를 자동화하고,
스택 드라이버를 사용하여 테스트를 모니터링하고 디버그 하십시오.)

NO.158 Your company creates rendering software which users can download from the company website. Your company has customers all over the world. You want to minimize latency for all your customers. You want to follow Google-recommended practices. How should you store the files?
요구사항 : 전 세계에서 다운로드할 수 있는 렌더링 소프트웨어를 만든다. 모든 고객의 대기 시간을 최소화하려는 경우 어떻게 파일을 저장해야 하는가?

해결방안 :
D. Save the files in multiple Multi-Regional Cloud Storage buckets, one bucket per multi-region. (파일을 다중 영역당 하나의 버킷으로 여러 Multi-Region Cloud Storage 버킷에 저장하십시오.)

NO.159 Your company acquired a healthcare startup and must retain its customers' medical information for up to 4 more years, depending on when it was created. Your corporate policy is to securely retain this data, and then delete it as soon as regulations allow. Which approach should you take?
요구사항 : 고객의 의료 정보를 최대 4년후 즉시 삭제해야 할 때, 파일을 어떻게 저장해야 하는가?.

해결방안 :
C. Store the data using the Cloud Storage and use lifecycle management to delete files when they expire.
(클라우드 스토리지를 사용하여 데이터를 저장하고 수명 주기 관리를 사용하여 만료된 파일을 삭제하십시오.)

NO.160 You are deploying a PHP App Engine Standard service with SQL as the backend. You want to minimize the number of queries to the database.
What should you do?
요구사항 : SQL을 백엔드로 하는 PHP App Engine Standard 서비스를 배포할 때, 데이터베이스에 대한 쿼리 수를 최소화하려고 한다. 어떻게 해야 할까?

해결방안 :
A. Set the memcache service level to dedicated. Create a key from the hash of the query, and return database values from memcache before issuing a query to Cloud SQL.
(memcache 서비스 레벨을 전용으로 설정하십시오.
쿼리의 해시에서 키를 생성하고, 클라우드 SQL에 쿼리를 실행하기 전에 memcache에서 데이터베이스 값을 반환하십시오.)

NO.161 You need to ensure reliability for your application and operations by supporting reliable task a scheduling for compute on GCP. Leveraging Google best practices, what should you do?
(GCP 컴퓨팅에 대한 안정적인 스케줄링을 지원하여 애플리케이션과 운영에 대한 신뢰성을 확보해야 한다. Google 모범 사례를 활용하여 어떻게 해야 하는가?)

A. Using the Cron service provided by App Engine, publishing messages directly to a message-processing utility service running on Compute Engine instances.
(앱 엔진에서 제공하는 크론 서비스를 사용하여 Cloud Pub/Sub 항목에 메시지를 게시. Compute Engine 인스턴스에서 실행되는 메시지 처리 유틸리티 서비스를 사용하여 이 항목을 구독)

B. Using the Cron service provided by App Engine, publish messages to a Cloud Pub/Sub topic. Subscribe to that topic using a message-processing utility service running on Compute Engine instances.

C. Using the Cron service provided by Google Kubernetes Engine (GKE), publish messages directly to a message-processing utility service running on Compute Engine instances.

D. Using the Cron service provided by GKE, publish messages to a Cloud Pub/Sub topic. Subscribe to that topic using a message-processing utility service running on Compute Engine instances. *Answer:* B

NO.162 Your company is building a new architecture to support its data-centric business focus. You are responsible for setting up the network. Your company's mobile and web-facing applications will be deployed on-premises, and all data analysis will be conducted in GCP. The plan is to process and load 7 years of archived .csv files totaling 900 TB of data and then continue loading 10 TB of data daily. You currently have an existing 100-MB internet connection. What actions will meet your company's needs?
(귀사는 데이터 중심 비즈니스 포커스를 지원하기 위한 새로운 아키텍처를 구축하고 있으며, 당신은 네트워크 설정을 책임진다. 귀사의 모바일 및 웹 대면 애플리케이션은 사내에 배치되며, 모든 데이터 분석은 GCP에서 수행될 것이다. 총 900TB의 데이터를 아카이브된 .csv 파일의 7년 동안 처리 및 로드한 다음 매일 10TB의 데이터를 계속해서 로드할 계획이다. 현재 100MB의 기존 인터넷 연결이 있는 경우. 어떤 조치가 귀사의 요구를 충족시킬 것인가?)

A. Compress and upload both achieved files and files uploaded daily using the qsutil -m option. B. Lease a Transfer Appliance, upload archived files to it, and send it, and send it to Google to transfer archived data to Cloud Storage. Establish a connection with Google using a Dedicated Interconnect or Direct Peering connection and use it to upload files daily.
(Transfer Appliance를 임대하여 아카이브된 파일을 업로드한 후 Google에 전송하여 아카이브된 데이터를 클라우드 스토리지로 전송.
전용 인터커넥트 또는 직접 피어링 연결을 사용하여 Google과 연결을 설정하고 이를 사용하여 매일 파일을 업로드.)

C. Lease a Transfer Appliance, upload archived files to it, and send it, and send it to Google to transfer archived data to Cloud Storage. Establish one Cloud VPN Tunnel to VPC networks over the public internet, and compares and upload files daily using the gsutil -m option.

D. Lease a Transfer Appliance, upload archived files to it, and send it to Google to transfer archived data to Cloud Storage. Establish a Cloud VPN Tunnel to VPC networks over the public internet, and compress and upload files daily.

Answer: **B**

NO.163 You are developing a globally scaled frontend for a legacy streaming backend data API. This API expects events in strict chronological order with no repeat data for proper processing.

Which products should you deploy to ensure guaranteed-once FIFO (first-in, first-out) delivery of data?
(레거시 스트리밍 백엔드 데이터 API를 위해 전 세계적으로 확장 가능한 프런트엔드를 개발 중인 경우.
이 API는 적절한 처리를 위해 반복 데이터가 없는 엄격한 시간 순으로 이벤트를 예상한다.
1회 선입선출(FIFO, 선입선출) 데이터 전송을 보장하려면 어떤 제품을 배치해야 하는가?)

A. Cloud Pub/Sub alone
B. Cloud Pub/Sub to Cloud DataFlow
C. Cloud Pub/Sub to Stackdriver
D. Cloud Pub/Sub to Cloud SQL
Answer: **D**

Explanation:
https://cloud.google.com/pubsub/docs/ordering

NO.164 A recent audit revealed that a new network was created in your GCP project. In this network, a GCE instance has an SSH port open to the world. You want to discover this network's origin. What should you do?
(최근의 감사에서 당신의 GCP 프로젝트에 새로운 네트워크가 만들어졌다는 것이 밝혀졌다.
이 네트워크에서, GCE 인스턴스는 세계에 SSH 포트를 개방한다.
이 네트워크의 원점을 검색하려는 경우, 너는 어떻게 해야 하는가?)

A. Search for Create VM entry in the Stackdriver alerting console
B. Navigate to the Activity page in the Home section. Set category to Data Access and search for Create VM entry
C. In the Logging section of the console, specify GCE Network as the logging section. Search for the Create Insert entry
(콘솔의 로깅 섹션에서 GCE 네트워크를 로깅 섹션으로 지정하십시오. 삽입 만들기 항목 검색)
D. Connect to the GCE instance using project SSH keys. Identify previous logins in system logs, and match these with the project owners list

Answer: **C**

Explanation:

Incorrect Answers:

A: To use the Stackdriver alerting console we must first set up alerting policies.
B: Data access logs only contain read-only operations.
Audit logs help you determine who did what, where, and when.
Cloud Audit Logging returns two types of logs:
Admin activity logs

Data access logs: Contains log entries for operations that perform read-only operations do not modify any data, such as get, list, and aggregated list methods.
A: 스택 드라이버 알림 콘솔을 사용하려면 먼저 알림 정책을 설정해야 한다.
B: 데이터 액세스 로그에는 읽기 전용 작업만 들어 있어.
감사 로그는 누가, 어디서, 언제 무엇을 했는지 결정하는 데 도움이 된다.
클라우드 감사 로깅이 반환하는 두 가지 로그 유형:
관리 작업 로그
데이터 액세스 로그: 읽기 전용 작업을 수행하는 작업에 대한 로그 항목 포함 - 가져오기, 목록 및 집계 목록 메서드와 같은 데이터를 수정하지 않음.

NO.165 A production database virtual machine on Google Compute Engine has an ext4-formatted persistent disk for data files. The database is about to run out of storage space. How can you remediate the problem with the least amount of downtime?
(Google Compute Engine의 프로덕션 데이터베이스 가상 시스템에는 데이터 파일을 위한 4가지 형식의 영구 디스크가 있다. 데이터베이스에 저장 공간이 부족하려고 하는 경우 다운타임을 최소화하는 방법으로 문제를 해결하려면 어떻게 해야 하는가?)

A. In the Cloud Platform Console, increase the size of the persistent disk and use the resize2fs command in Linux.
(Cloud Platform Console에서 영구 디스크 크기를 늘리고 Linux에서 size2fs 명령을 사용하십시오.)
B. Shut down the virtual machine, use the Cloud Platform Console to increase the persistent disk size, then restart the virtual machine
C. In the Cloud Platform Console, increase the size of the persistent disk and verify the new space is ready to use with the fdisk command in Linux
D. In the Cloud Platform Console, create a new persistent disk attached to the virtual machine, format and mount it, and configure the database service to move the files to the new disk
E. In the Cloud Platform Console, create a snapshot of the persistent disk restore the snapshot to a new larger disk, unmount the old disk, mount the new disk and restart the database service *Answer:* A

Explanation:
On Linux instances, connect to your instance and manually resize your partitions and file systems to use the additional disk space that you added.

Extend the file system on the disk or the partition to use the added space. If you grew a partition on your disk, specify the partition. If your disk does not have a partition table, specify only the disk ID. sudo resize2fs /dev/[DISK_ID][PARTITION_NUMBER]

where [DISK_ID] is the device name and [PARTITION_NUMBER] is the partition number for the device where you are resizing the file system.

References: https://cloud.google.com/compute/docs/disks/add-persistent-disk
(Linux 인스턴스에서 인스턴스에 연결하고 파티션 및 파일 시스템의 크기를 수동으로 조정하여 추가한 추가 Disk 공간을 사용하십시오.
여기서 [DISK_ID]는 장치 이름이고 [PARTITION_NUMBER]는 파일 시스템의 크기를 조정하는 장치의 파티션 번호다.)

NO.166 Your company's user-feedback portal comprises a standard LAMP stack replicated across two zones. It is deployed in the us-central1 region and uses autoscaled managed instance groups on all layers, except the database. Currently, only a small group of select customers have access to the portal. The portal meets a 99,99% availability SLA under these conditions. However next quarter, your company will be making the portal available to all users, including unauthenticated users. You need to develop a resiliency testing strategy to ensure the system maintains the SLA once they introduce additional user load.
What should you do?
(귀사의 사용자 피드백 포털은 표준 LAMP 스택 복제 애크로스투 존으로 구성된다. us-central1 영역에 배치되며 데이터베이스를 제외한 모든 계층에서 자동화된 관리 인스턴스 그룹을 사용한다. 현재, 소수의 엄선된 고객들만이 포탈에 접근할 수 있다. 이러한 상황에서 포털은 99,99%의 가용성 SLA를 충족한다. 하지만 다음 분기에 귀사는 인증되지 않은 사용자를 포함한 모든 사용자가 포털을 이용할 수 있도록 할 것이다. 사용자 로드가 추가되면 시스템이 SLA를 유지할 수 있도록 복원력 테스트 전략을 개발하라. 이 때 어떻게 해야 할 것인가?)

A. Capture existing users input, and replay captured user load until autoscale is triggered on all layers. At the same time, terminate all resources in one of the zones

B. Create synthetic random user input, replay synthetic load until autoscale logic is triggered on at least one layer, and introduce "chaos" to the system by terminating random resources on both zones C. Expose the new system to a larger group of users, and increase group size each day until autoscale logic is triggered on all layers. At the same time, terminate random resources on both zones

D. Capture existing users input, and replay captured user load until resource utilization crosses 80%. Also, derive estimated number of users based on existing user's usage of the app, and deploy enough resources to handle 200% of expected load
(기존 사용자 입력을 캡처하고 리소스 활용률이 80%를 넘을 때까지 캡처한 사용자 로드를 재생. 또한 기존 사용자의 앱 사용량을 기준으로 예상 사용자 수를 도출하고, 예상 로드의 200%를 처리할 수 있는 충분한 리소스를 배치한다.)
Answer: D

NO.167 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 are in charge of the new Game Backend Platform architecture. The game communicates with the backend over a REST API. You want to follow Google-recommended practices. How should you design the backend?
(새로운 게임 백엔드 플랫폼 아키텍처를 담당한다. 게임은 REST API를 통해 백엔드와 통신한다. Google 권장 사례를 따른다면 백엔드를 어떻게 설계해야 하는가?)

A. Create an instance template for the backend. For every region, deploy it on a multi-zone managed instance group. Use an L4 load balancer.

B. Create an instance template for the backend. For every region, deploy it on a single-zone managed instance group. Use an L4 load balancer.

C. Create an instance template for the backend. For every region, deploy it on a multi-zone managed instance group. Use an L7 load balancer.
(백엔드에 대한 인스턴스 템플릿을 생성.
각 지역에 대해 멀티존 관리 인스턴스 그룹에 배포.
L7 로드 밸런서를 사용하십시오.)
(- 로드밸런싱 : 부하분산 또는 로드 밸런싱은 컴퓨터 네트워크 기술의 일종으로 둘 혹은 셋이상의 중앙처리장치 혹은 저장장치와 같은 컴퓨터 자원들에게 작업을 나누는 것을 의미한다. 이로써 가용성 및 응답시간을 최적화 시킬 수 있다.)
(L2, L4, L7 종류가 있으며 L7은 HTTP, FTP, SMTP Protocol의 환경 사용)

D. Create an instance template for the backend. For every region, deploy it on a single-zone managed instance group. Use an L7 load balancer.

***Answer:* C**

NO.168 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.

Your agricultural division is experimenting with fully autonomous vehicles. You want your architecture to promote strong security during vehicle operation. Which two architectures should you consider? (Choose two.)
(당신의 부서는 완전 자율 차량을 실험하고 있다. 귀하는 귀사의 아키텍처가 차량 작동 중에 강력한 보안을 강화하기를 원한다면 어떤 두 가지 아키텍처를 고려해야 하는가?)

A. Treat every micro service call between modules on the vehicle as untrusted.
(차량의 모듈 간 모든 마이크로 서비스 호출을 신뢰할 수 없는 것으로 간주)

B. Require IPv6 for connectivity to ensure a secure address space.
C. Use a trusted platform module (TPM) and verify firmware and binaries on boot.
(기능 프로그래밍 언어를 사용하여 코드 실행 주기를 분리하십시오.)

D. Use a functional programming language to isolate code execution cycles.
E. Use multiple connectivity subsystems for redundancy.

F. Enclose the vehicle's drive electronics in a Faraday cage to isolate chips.

***Answer:* AC**

NO.169 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. A new architecture that writes all incoming data to BigQuery has been introduced. You notice that the data is dirty, and want to ensure data quality on an automated daily basis while managing cost.

What should you do?
(들어오는 모든 데이터를 빅쿼리에 쓰는 새로운 아키텍처가 도입됐다. 데이터가 더럽혀졌다는 것을 알게 되고, 비용을 관리하는 동안 매일 자동화된 방식으로 데이터 품질을 보장하고자 하는 경우.
어떻게 할 것인가?)

A. Set up a streaming Cloud Dataflow job, receiving data by the ingestion process. Clean the data in a

Cloud Dataflow pipeline.

B. Create a Cloud Function that reads data from BigQuery and cleans it. Trigger it. Trigger the Cloud Function from a Compute Engine instance.

C. Create a SQL statement on the data in BigQuery, and save it as a view. Run the view daily, and save the result to a new table.

D. Use Cloud Dataprep and configure the BigQuery tables as the source. Schedule a daily job to clean the data.
(Cloud Dataprep을 사용하여 BigQuery 테이블을 소스로 구성하십시오. 데이터를 정리하는 작업을 매일 예약하십시오.)
Answer: **D**

NO.170 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

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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.

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Use customer and equipment data to anticipate customer needs.

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- **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. Considering the technical requirements, how should you reduce the unplanned vehicle downtime in GCP?
(기술 요구 사항을 고려할 때 GCP의 계획되지 않은 차량 다운타임을 어떻게 줄여야 하는가?)

A. Use BigQuery as the data warehouse. Connect all vehicles to the network and stream data into BigQuery using Cloud Pub/Sub and Cloud Dataflow. Use Google Data Studio for analysis and reporting.
데이터 웨어하우스로 BigQuery를 사용하십시오. Cloud Pub/Sub 및 Cloud Dataflow를 사용하여 모든 차량을 네트워크에 연결하고 데이터를 BigQuery로 스트리밍하십시오.
분석 및 보고를 위해 Google 데이터 스튜디오를 사용하십시오.

B. Use BigQuery as the data warehouse. Connect all vehicles to the network and upload gzip files to a Multi-Regional Cloud Storage bucket using gcloud. Use Google Data Studio for analysis and reporting. C. Use Cloud Dataproc Hive as the data warehouse. Upload gzip files to a MultiRegional Cloud Storage bucket. Upload this data into BigQuery using gcloud. Use Google data Studio for analysis and reporting.

D. Use Cloud Dataproc Hive as the data warehouse. Directly stream data into prtitioned Hive tables.

Use Pig scripts to analyze data.

NO.171 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 storageApplication 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 are asked to design a new architecture for the ingestion of the data of the 200,000 vehicles that are connected to a cellular network. You want to follow Google-recommended practices.
Considering the technical requirements, which components should you use for the ingestion of the data?

A. Google Kubernetes Engine with an SSL Ingress
요구 사항 : 20만개의 데이터 수집을 위한 아키텍처를 설계해야한다. 어떤 구성요소를 사용해야하는가?
해결 방법 : SSL 수신 기능이 있는 Google Kubernetes 엔진

NO.172 Case Study: 4 - 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.
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.
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?

A. They should add additional unit tests and production scale load tests on their cloud stagingenvironment.

요구 사항 : 클라우드로 이동하며 새로운 버그가 발생하지 않는 것을 원한다. 개발자가 운영 중단을 방지하기위해 어떤 테스트를 사용해야 하는가?
해결 방법 : 클라우드 스테이징 환경에 장치 테스트와 생산 규모 부하테스트를 추가해야한다.

NO.173 Case Study: 4 - 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.
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.
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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.
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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.
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?
A. Google Cloud Storage Coldline to store the data, and gsutil to access the data.

요구 사항 :
해결 방법 : Coldline을 사용해라.
ð Coldline Storage
ð Coldline Storage는 자주 액세스하지 않는 데이터를 저장하기 위한 매우 저렴하고 내구성 높은 스토리지 서비스입니다. Coldline Storage는 더 저렴한 저장 데이터 비용을 위해 약간 더 낮은 가용성, 90일의 최소 저장 기간, 높은 데이터 액세스 비용을 용인할 수 있는 시나리오에서 표준 스토리지 또는 Nearline Storage보다 더 나은 선택입니다.
ð Coldline Storage는 분기당 최대 1회 읽거나 수정할 데이터에 적합합니다. 하지만 백업 또는 보관처리 용도로 데이터를 온전히 보관하는 경우 Archive Storage가 저장 비용이 가장 저렴하므로 비용면에서 효율적입니다.
Explanation: https://cloud.google.com/storage/docs/storage-classes

NO.174 Case Study: 4 - Dress4Win
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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.
The current Dress4win system architecture has high latency to some customers because it is located in one data center.
As of a future evaluation and optimizing for performance in the cloud, Dresss4win wants to distribute its system architecture to multiple locations when Google cloud platform.
Which approach should they use?
A. Use a global load balancer with a set of virtual machines that forward the requests to a closergroup of virtual machines as part of a separate managed instance groups.

요구 사항 : 안정적이고 재현 가능한 환경을 구축하라. 비즈니스 민첩성 및 혁신 속도 향상
클라우드의 성능을 위해 아키텍처 분석 및 최적화 다른 모든 요구사항이 충족되면 클라우드로 마이그레이션해라.
기술 요구 사항 : 리소스 프로비저닝을 위한 자동화 프레임워크를 선택해라. 비상 시 운영 환경을 페일오버 지원 용량을 절약하기 위해 클라우드로 마이그레이션할 수 있는 프로덕션 서비스 식별 가능하면 관리되는 서비스를 사용. 무선 및 유휴 상태의 데이터를 암호화 해라.
해결 방안 : 글로벌 로드 밸런서와 요청을 처리하는 가상 시스템 집합을 함께 사용해라.
ð 머라카노,,

NO.175 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.
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 RAMStorage appliances: iSCSI for VM hosts

Fiber channel SAN - MySQL databases

- 1 PB total storage; 400 TB availableNAS - 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. To be legally compliant during an audit, Dress4Win must be able to give insights in all administrative actions that modify

the configuration or metadata of resources on Google Cloud. What should you do?

A. Use the Activity page in the GCP Console and Stackdriver Logging to provide the required insight.

요구 사항 : Dress4Win은 구글 클라우드 자원의 구성이나 메타데이터를 수정하는 모든 관리 작업에 대한 통찰력을 제공할 수 있어야 한다.
해결 방법 : GCP Console 및 Stackdriver Logging Activity 페이지를 사용하여 필요한 통찰력을 제공하십시오
ð 먼소리고?

NO.176 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.
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Our investors are concerned about our ability to scale and contain costs with our current

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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. You are responsible for the security of data stored in Cloud Storage for your company, Dress4Win. You have already created a set of Google Groups and assigned the appropriate users to those groups. You should use Google best practices and implement the simplest design to meet the requirements.
Considering Dress4Win's business and technical requirements, what should you do?
A. Assign predefined IAM roles to the Google Groups you created in order to enforce securityrequirements. Ensure that the default Cloud KMS key is set before storing files in Cloud Storage.

요구 사항 : 귀사는 귀사의 클라우드 스토리지에 저장된 데이터의 보안을 책임진다. Google 그룹을 만들고 해당 그룹에 적절한 사용자를 할당했다. 구글의 요구사항을 충족하기위해 가장 단순한 디자인을 구현해야한다.
해결 방법 : Cloud Storage에 파일을 저장하기 전에 기본 Cloud KMS 키가 설정되어 있는지 확인하십시오.
ð KMS : Key Management Service

NO.177 Case Study: 5 - Dress4win
Company Overview
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For this question, refer to the Dress4Win case study. You want to ensure that your on-premises architecture meets business requirements before you migrate your solution. What change in the on-premises architecture should you make?

A. Downgrade MySQL to v5.7, which is supported by Cloud SQL for MySQL.

요구 사항 : Dress4Win을 바탕으로 사내 아키텍처에 필요한 변화를 선택하라.
해결 방법 : MySQL을 v5.7로 다운그레이드 해라.

NO.178 Your company wants to deploy several microservices to help their system handle elastic loads.
Each microservice uses a different version of software libraries. You want to enable their developers to keep their development environment in sync with the various production services.
Which technology should you choose?

A. Containers
요구 사항 : 시스템이 탄력적으로 task를 처리하기위해 여러 개의 마이크로 서비스를 배치하기를 원한다. 각 서비스는 다른 버전의 sw라이브러리를 사용한다. 개발자가 개발 환경을 다양한 프로덕션 서비스와 동기화 하기위해서는 어떤 기술을 사용해야하는가?
해결 방법 : 컨테이너
ð 개발, 테스트, 배포에 컨테이너를 사용하는 것은 모든 환경에 단일 호스트 OS이미지를 사용할 수 있도록 추상적인 시스템 OS환경을 사용하기 때문이다. 개발 중에 이루어지는 변경사항은 복사 온 쓰기 파일 시스템을 사용하여 캡처되며 팀은 저장소에 새로운 버전의 마이크로 서비스를 쉽게 게시할 수 있다.

NO.179 Your company wants to track whether someone is present in a meeting room reserved for a scheduled meeting. There are 1000 meeting rooms across 5 offices on 3 continents. Each room is equipped with a motion sensor that reports its status every second. You want to support the data upload and collection needs of this sensor network. The receiving infrastructure needs to account for the possibility that the devices may have inconsistent connectivity. Which solution should you design?

A. Have devices poll for connectivity to Cloud Pub/Sub and publish the latest messages on a regularinterval to a shared topic for all devices.

요구 사항 : 미팅룸에 누가 참여했는지 알고싶다. 3대륙 5개 사무실에 1000개의 회의실이 있다. 1초마다 동작 센서가 상태를 보고하는데, 이 센서 네트워크 데이터 업로드 및 수입 요구를 지원하는 경우 수신 기기가 일관성 없는 연결을 할 수 있다. 어떻게 해야함?
해결 방법 : Cloud Pub/Sub 연결에 장치 폴링을 실시하고 주제에 대한 정기적 인터벌에 최신 메시지 게시

NO.180 Your organization has 5 TB of private data on premises. You need to migrate the data to Cloud Storage. You want to maximize the data transfer speed. How should you migrate the data?

A. Use gsutil.

요구 사항 : 5TB의 개인 데이터를 사내에 보유중인데 데이터를 클라우드 스토리지로 마이그레이션해라. 가장 최대 속도를 내고싶을 때 어떻게 해야함?
해결 방법 : gsutil 써라
ð Gsutil은 클라우드 스토리지에 데이터를 쓸수있는 권한을 제공하기 때문

NO.181 You are designing a mobile chat application. You want to ensure that people cannot spoof chat messages by proving that a message was sent by a specific user. What should you do?
요구사항 : 특정 사용자가 메시지를 보냈다는 것을 증명하여 사람들이 스푸핑을 할 수 없도록 하려면?

D. Use public key infrastructure (PKI) to encrypt the message client-side using the originating user's
private key.
(PKI는 서버와 클라이언트가 모두 서명된 인증서를 필요로 하기 때문에 옳음
클라이언트와 서버 모두의 검증이 가능 – 공동키(암호화)와 개인키(복호화)
Answer: D

NO.182 Your customer is moving their corporate applications to Google Cloud Platform. The security team wants detailed visibility of all resources in the organization. You use Resource Manager to set yourself up as the org admin. What Cloud Identity and Access Management (Cloud IAM) roles should you give to the security team?

B. Org viewer, Project viewer

Answer: B

Explanation:
B is correct because:
- Org viewer grants the security team permissions to view the organization's display name.
- Project viewer grants the security team permissions to see the resources within projects.

요구사항 : 고객이 회사 애플리케이션을 Google Cloud Platform으로 이전하고 있습니다. 보안 팀은 조직의 모든 리소스에 대한 자세한 가시성을 원합니다. Resource Manager를 사용하여 자신을 조직 관리자로 설정합니다. 보안 팀에 부여해야하는 Cloud Identity and Access Management (Cloud IAM) 역할은 무엇입니까?

해결방법 : 조직 뷰어, 프로젝트 뷰어
-조직 뷰어는 보안 팀에게 조직의 표시 이름을 볼 수있는 권한을 부여합니다.
-프로젝트 뷰어는 보안 팀에게 프로젝트 내의 리소스를 볼 수있는 권한을 부여합니다.