

Google Cloud Professional Cloud Architect

Included
CASE STUDY
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276 EXAM QUESTION AND ANSWERS

1) The development team has submitted a ticket for a web application that is crashing due to high CPU utilization. The network admin has suggested creating a Managed Instance Group to handle the load. Which suggested configuration below could solve the problem?

- A. Create a Managed Instance Group with an autoscaling policy based on load balancing serving capacity.
- B. Create a Managed Instance Group with a cluster autoscaler with a fixed minimum and a maximum number of instances.
- C. Create a Managed Instance Group with an autohealing policy that attempts to recreate the crashed instance.
- D. **Create a Managed Instance Group with an autoscaling policy based on CPU utilization.**

Correct Answer: D

Using an autoscaler based on CPU utilization would be the most effective approach. This problem is not directly related to traffic, so configuring based on the load balancer would not be effective. The cluster autoscaler is specifically for GKE groups. The autohealer is the incorrect tool - it will not resolve the issue.

<https://cloud.google.com/compute/docs/autoscaler>

2) An application development team believes their current logging tool will not meet their needs for their new cloud-based product. They want a better tool to capture errors and help them analyze their historical log data. You want to help them find a solution that meets their needs.

What should you do?

- A. Direct them to download and install the [Google StackDriver logging agent](#)
- B. Send them a list of online resources about logging best practices
- C. [Help them define their requirements and assess viable logging tools](#)
- D. Help them upgrade their current tool to take advantage of any new features

Correct Answer: C

3) There is one application that has been utilizing a lot of bandwidth - sending out large packets. This particular app attempts to control the TCP window size so that it can maximize its own performance, to the detriment of other services running on the same WM.

Which Linux tunable below would you adjust to set the maximum OS send buffer size for all connections?

- A. Net.core.rmem_max
- B. **Net.core.wmem_max**
- C. net.ipv4.tcp_rmem
- D. net.ipv4.tcp_wmem

Correct Answer: *B*

Net.core.wmem_max allows an admin with root access to **set the send buffer size** for all types of connections.

<https://cloud.google.com/solutions/tcp-optimization-for-network-performance-in-gcp-and-hybrid>

4) A news feed web service has the following code running on Google App Engine. During peak load, users report that they can see news articles they already viewed.

What is the most likely cause of this problem?

- A. The session variable is local to just a single instance
- B. The session variable is being overwritten in Cloud Datastore
- C. The URL of the API needs to be modified to prevent caching
- D. The HTTP Expires header needs to be set to -1 stop caching

Correct Answer: A

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

app = Flask(__name__)
sessions = {}

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

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

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

    return news.render(news_articles)

if __name__ == "__main__":
    app.run()
```

5) Your company has recently acquired another company operating in Spain to expand your market in Europe. You have to integrate their legacy systems into your company's systems. Your company uses GCP as the primary cloud to manage your applications.

Assuming your team is taking this opportunity to modernize parts of the legacy system, what is the best way to integrate this system into your company's systems?

- A. Containerize the legacy applications using GKE and run them on the on-prem instances. Use Anthos for managing the applications
- B. Create snapshot of the legacy systems and run them on compute instances on GCP
- C. Containerize the legacy applications using GKE and run the GKE instances on GCP
- D. Use transfer appliance to securely ship the data from on-prem systems to GCP

Correct Answer: A

The legacy systems are on-prem and it would be difficult to migrate them on cloud. You should containerize the applications and run them on GKE.

Google Anthos can be used to consistently run and manage Kubernetes workloads across on-prem systems and GCP.

All other options are not optimal and take time to integrate with their existing GCP systems.

<https://cloud.google.com/anthos/docs/concepts/overview>

6) The operations manager asks you for a list of recommended practices that she should consider when migrating a J2EE application to the cloud.

Which three practices should you recommend? (Choose three.)

- A. Port the application code to run on Google App Engine
- B. Integrate Cloud Dataflow into the application to capture real-time metrics
- C. Instrument the application with a monitoring tool like Stackdriver Debugger
- D. Select an automation framework to reliably provision the cloud infrastructure
- E. Deploy a continuous integration tool with automated testing in a staging environment
- F. Migrate from MySQL to a managed NoSQL database like Google Cloud Datastore or Bigtable

Correct Answer: ADE

7) A start-up in the decentralized finance space provides portfolio management services for customers holding digital assets. In order to manage the digital assets they take custody of their customer's private keys which are very sensitive and prone to hacking.

They plan to use the private keys of high value assets only when required and store them offline in their on-premise systems. They use GCP as their primary infrastructure and would like to know how to access and update the private keys securely only when required.

What is the best way to achieve this? (Choose three)

- A. Create a VM in a separate VPC and use it to temporarily store the private keys. Create a peering connection with the main VPC to update or access the private keys.
- B. Store the private keys on premise and copy them to the VM through cloud VPN.
- C. Copy the updated private keys back to on-prem system and delete the VM instance
- D. Connect the on-prem system to the main VPC through cloud VPN.

Correct Answer: ABC

Cloud VPN is the best way to connect the on-prem system to the GCP as the data needs to be accessed only a few times.

Creating a temporary VM in a separate VPC will make it more secure and avoid exposing the on-prem systems directly to the main VPC.

The best way to achieve the required solution is to use the temporary VM to update the private keys whenever required and deleting it after usage, so that they are not stored on the cloud.

<https://cloud.google.com/hybrid-connectivity#section-6>

8) Your company plans to migrate a multi-petabyte data set to the cloud. The data set must be available 24hrs a day. Your business analysts have experience only with using a SQL interface. How should you store the data to optimize it for ease of analysis?

- A. Load data into Google BigQuery
- B. Insert data into Google Cloud SQL
- C. Put flat files into Google Cloud Storage
- D. Stream data into Google Cloud Datastore

Correct Answer: A

BigQuery is Google's serverless, highly scalable, low cost enterprise data warehouse designed to make all your data analysts productive. Because there is no infrastructure to manage, you can focus on analyzing data to find meaningful insights using familiar SQL and you don't need a database administrator. BigQuery enables you to analyze all your data by creating a logical data warehouse over managed, columnar storage as well as data from object storage, and spreadsheets.

<https://cloud.google.com/bigquery/>

9) A development team has launched a vital application on a regional managed instance group that must have nearly zero downtime.

To ensure high availability, you now have to configure a global load balancer to direct HTTP traffic across multiple zones. After configuring the backend then the frontend of the load balancer, you click Review and Finalize.

Assuming you have configured the load balancer correctly, what backend settings do you see upon review?

- A. The Backend service is web-app-backend. The Endpoint protocol is HTTP. The Health check is web-app-load-balancer-check. The Instance group is load-balancing-web-app-group.
- B. The Backend service is web-app-backend. The Endpoint protocol is TCP. The Health check is load-balancing-web-app-group. The Instance group is web-app-load-balancer-check.
- C. The Backend service is web-app-backend. The Endpoint protocol is HTTP. The Health check is load-balancing-web-app-group. The Instance group is web-app-load-balancer-check.
- D. The Backend service is web-app-backend. The Endpoint protocol is TCP. The Health check is web-app-load-balancer-check. The Instance group is load-balancing-web-app-group.

Correct Answer: A

https://cloud.google.com/compute/docs/tutorials/high-availability-load-balancing#simulating_a_zonal_outage

10) Your company has decided to make a major revision of their API in order to create better experiences for their developers. They need to keep the old version of the API available and deployable, while allowing new customers and testers to try out the new API. They want to keep the same SSL and DNS records in place to serve both APIs. What should they do?

- A. Configure a new load balancer for the new version of the API
- B. Reconfigure old clients to use a new endpoint for the new API
- C. Have the old API forward traffic to the new API based on the path
- D. Use separate backend pools for each API path behind the load balancer**

Correct Answer: D

11) When you use Google Cloud Code to integrate Anthos with an IDE, _____ uses your local Docker installation to manage a single Kubernetes cluster on your development machine.

- A. OpenShift
- B. OpenStack
- C. Minikube
- D. Skaffold

Correct Answer: C

Cloud Code integrates a number of Google APIs into our IDE, and uses Minikube and Skaffold under the hood to streamline container-based development on our local machine. Minikube uses our local Docker installation to manage a single Kubernetes cluster on our development machine.

12) You need to reduce the number of unplanned rollbacks of erroneous production deployments in your company's web hosting platform. Improvement to the QA/Test processes accomplished an 80% reduction.

Which additional two approaches can you take to further reduce the rollbacks? (Choose two.)

- A. Introduce a green-blue deployment model
- B. Replace the QA environment with canary releases
- C. Fragment the monolithic platform into microservices
- D. Reduce the platform's dependency on relational database systems
- E. Replace the platform's relational database systems with a NoSQL database

Correct Answer: AC

13) A financial service provider runs their GCP infrastructure in the London (europe-west2) region. They promise high service levels to their customers and cannot risk regional unavailability. The head of IT wants to have a disaster recovery plan for their Cloud SQL instances in case the region fails or becomes unavailable.

Regulation requires that they keep the data in the European region.

What are the steps for a complete disaster recovery plan that will give them near zero Recovery Point Objective? (Choose three)

- A. Create cross-region read replicas of the SQL instances in Belgium (europe-west1). If failover is required, make the cross-region read replica as primary.
- B. Create a new standby instance in different zone in Belgium (europe-west1)
- C. Create cross-region read replicas of the SQL instances in South Carolina (us-east1). If failover is required, make the cross-region read replica as primary.
- D. Create a new cross-region replica in Frankfurt (europe-west3) and attach to the primary instance.

Correct Answer: ABD

<https://cloud.google.com/blog/products/databases/introducing-cross-region-replica-for-cloud-sql>

14) To reduce costs, the Director of Engineering has required all developers to move their development infrastructure resources from on-premises virtual machines (VMs) to Google Cloud Platform. These resources go through multiple start/stop events during the day and require state to persist. You have been asked to design the process of running a development environment in Google Cloud while providing cost visibility to the finance department. Which two steps should you take? (Choose two.)

- A. Use the --no-auto-delete flag on all persistent disks and stop the VM
- B. Use the --auto-delete flag on all persistent disks and terminate the VM
- C. Apply VM CPU utilization label and include it in the BigQuery billing export
- D. Use Google BigQuery billing export and labels to associate cost to groups
- E. Store all state into local SSD, snapshot the persistent disks, and terminate the VM
- F. Store all state in Google Cloud Storage, snapshot the persistent disks, and terminate the VM

Correct Answer: AD

15) You have recently migrated data to the Google Cloud Platform, and you are ready to connect your on-premise networks to Google Cloud. Review the requirements below and choose the best connection option.

- Guaranteed Network Availability and High Bandwidth: low
- Private Network connection: Not required
- Custom Routing: Not required
- Google Workspace Access: Required
- Budget to establish connection: None

Which option fits the requirements best?

- A. Direct Peering
- B. Carrier Peering
- C. Dedicated Interconnect
- D. Partner Interconnect

Correct Answer: A

Direct Peering is the best choice. It is essentially free. Custom routing is not an option, and the connection is supported over the public internet rather than a private connection. Google Workspace applications are available to users.

<https://cloud.google.com/network-connectivity/docs/direct-peering>

16) Your company wants to track whether someone is present in a meeting room reserved for a scheduled meeting. There are 1000 meeting rooms across 5 offices on 3 continents. Each room is equipped with a motion sensor that reports its status every second. The data from the motion detector includes only a sensor ID and several different discrete items of information. Analysts will use this data, together with information about account owners and office locations. Which database type should you use?

- A. Flat file
- B. NoSQL**
- C. Relational
- D. Blobstore

Correct Answer: B

Relational databases were not designed to cope with the scale and agility challenges that face modern applications, nor were they built to take advantage of the commodity storage and processing power available today.

NoSQL fits well for:

- ☞ Developers are working with applications that create massive volumes of new, rapidly changing data types "€
structured, semi-structured, unstructured and polymorphic data.

Incorrect Answers:

D: The Blobstore API allows your application to serve data objects, called blobs, that are much larger than the size allowed for objects in the Datastore service.

Blobs are useful for serving large files, such as video or image files, and for allowing users to upload large data files.

Reference:

<https://www.mongodb.com/nosql-explained>

17) A mobile gaming firm that is planning to launch a multiplayer version of their flagship game. They are using BigTable as a database and an application layer running on GKE containers. Since it is hard to predict the traffic, they are planning to use Ingress for load balancing to dynamically scale the application layer.

They want to restrict the traffic from the web layer to be restricted to the application layer and not the database layer. What is the easiest way to achieve this?

- A. Create a different subnet to each layer. Use VPC network peering to allow traffic between web layer & application layer and application & database layer
- B. Create custom tags to identify the GKE containers and create firewall rules using the tags to allow the desired traffic flow
- C. Create custom tags to identify the GKE containers and set up routes using the tags to allow the desired traffic flow
- D. Create custom labels to identify the GKE containers and create firewall rules using the labels to allow the desired traffic flow

Correct Answer: B

<https://cloud.google.com/resource-manager/docs/creating-managing-labels>

18) You set up an autoscaling instance group to serve web traffic for an upcoming launch. After configuring the instance group as a backend service to an HTTP(S) load balancer, you notice that virtual machine (VM) instances are being terminated and re-launched every minute. The instances do not have a public IP address.

You have verified the appropriate web response is coming from each instance using the curl command. You want to ensure the backend is configured correctly.

What should you do?

- A. Ensure that a firewall rules exists to allow source traffic on HTTP/HTTPS to reach the load balancer.
- B. Assign a public IP to each instance and configure a firewall rule to allow the load balancer to reach the instance public IP.
- C. Ensure that a firewall rule exists to allow load balancer health checks to reach the instances in the instance group.
- D. Create a tag on each instance with the name of the load balancer. Configure a firewall rule with the name of the load balancer as the source and the instance tag as the destination.

Correct Answer: C

The best practice when configuration a health check is to check health and serve traffic on the same port. However, it is possible to perform health checks on one port, but serve traffic on another. If you do use two different ports, ensure that firewall rules and services running on instances are configured appropriately. If you run health checks and serve traffic on the same port, but decide to switch ports at some point, be sure to update both the backend service and the health check.

Backend services that do not have a valid global forwarding rule referencing it will not be health checked and will have no health status.

Reference:

<https://cloud.google.com/compute/docs/load-balancing/http/backend-service>

19) Your company hosts many applications on GCP that each store various kinds of data. The head of data compliance is concerned that if there is any PII (personally identifiable information) present in the data, it might attract fines if not processed correctly.

He asked you to come up with a solution that identifies the PII, classifies it and anonymizes it if it has to be processed. He is aware of the dynamic nature of the applications and data and is looking for a solution that is easy to manage with minimum overhead.

As a GCP cloud architect what solution will you propose? (Choose two)

- A. Use Cloud DLP (Data Loss Prevention) to scan data stored in Cloud Storage, Datastore and BigQuery & use Cloud Data Catalog to tag PII data
- B. Use Cloud Data Catalog to search the PII in Cloud Storage, Datastore and BigQuery
- C. Use Cloud DLP de-identification transformation templates for the datasets that are identified with PII & Cloud Dataflow to de-identify them
- D. Use Cloud DLP to de-identify the PII datasets and use them for processing

Correct Answer: AC

<https://cloud.google.com/architecture/de-identification-re-identification-pii-using-cloud-dlp>

20) You write a Python script to connect to Google BigQuery from a Google Compute Engine virtual machine. The script is printing errors that it cannot connect to BigQuery.

What should you do to fix the script?

- A. Install the latest BigQuery API client library for Python
- B. Run your script on a new virtual machine with the BigQuery access scope enabled
- C. Create a new service account with BigQuery access and execute your script with that user
- D. Install the bq component for gcloud with the command gcloud components install bq.

Correct Answer: C

21) A major department store chain has developed a data pipeline to ingest sales data from both physical stores and their website. The data scientist team recently trained a sales forecast model and deployed into production. Over time, the model's performance has degraded. As a ML consultant, you need to help design a solution in Google Cloud to address the model performance issue. How would you implement a solution in GCP? (Choose Two)

- A. Deploy the model to AI platform and set up a continuous evaluation job to detect model performance issue, then retrain the model
- B. Deploy the model to AI platform and set up a model monitoring job to alert performance issue, then retrain the model
- C. Deploy the model to Vertex AI and set up a continuous evaluation job to alert model performance issue, then retrain the model
- D. Deploy the model to Vertex AI and set up a model monitoring job to alert data skew or data drift issue, then retrain the model

Correct Answer: AD

<https://cloud.google.com/ai-platform/prediction/docs/continuous-evaluation/>

22) Your team is about to deploy new infrastructure for a client who has asked you to restrict the team to only the us-central-1 region. How can you fulfill the given requirement for all the projects in the organization?

- A. Organization Policy Constraints
- B. Restrict regions in projects
- C. Custom IAM policy
- D. There is no such feature available in Google cloud

Correct Answer: A

Organization policy constraints can be used to restrict the users to use a particular region at organization level. The remaining choices are incorrect for the following reasons:

- There is no such custom policy you can create where you can restrict users from using a particular region. Only Organization policy constraints can be used to restrict the users at the organization level.

<https://cloud.google.com/resource-manager/docs/organization-policy/org-policy-constraints>

23) Your company has successfully migrated to the cloud and wants to analyze their data stream to optimize operations. They do not have any existing code for this analysis, so they are exploring all their options. These options include a mix of batch and stream processing, as they are running some hourly jobs and live- processing some data as it comes in. Which technology should they use for this?

- A. Google Cloud Dataproc
- B. Google Cloud Dataflow**
- C. Google Container Engine with Bigtable
- D. Google Compute Engine with Google BigQuery

Correct Answer: B

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

Reference:

<https://cloud.google.com/dataflow/>

24) You have installed a system update on a group of Google Shielded VMs that have hosted your application for the last three weeks. Before rebooting the VMs, what step should you take to ensure that the VM security features operate correctly?

- A. Update the integrity policy baseline
- B. Disable the secure boot feature
- C. Back up the secure memory boot logs
- D. Rotate your encryption and signing keys

Correct Answer: A

If you expect your Shielded VMs to fail reboot security checks, for example, if you applied a system update on that VM instance, you should update the integrity policy baseline. Updating the integrity policy baseline sets the baseline to the measurements captured from the most recent boot sequence. If it is not expected, you should stop that VM instance and investigate the reason for the failure.

<https://cloud.google.com/security/shielded-cloud/shielded-vm#integrity-monitoring>

25) Your customer is receiving reports that their recently updated Google App Engine application is taking approximately 30 seconds to load for some of their users.

This behavior was not reported before the update.

What strategy should you take?

- A. Work with your ISP to diagnose the problem
- B. Open a support ticket to ask for network capture and flow data to diagnose the problem, then roll back your application
- C. Roll back to an earlier known good release initially, then use Stackdriver Trace and Logging to diagnose the problem in a development/test/staging environment
- D. Roll back to an earlier known good release, then push the release again at a quieter period to investigate. Then use Stackdriver Trace and Logging to diagnose the problem

Correct Answer: C

Stackdriver Logging allows you to store, search, analyze, monitor, and alert on log data and events from Google Cloud Platform and Amazon Web Services (AWS). Our API also allows ingestion of any custom log data from any source. Stackdriver Logging is a fully managed service that performs at scale and can ingest application and system log data from thousands of VMs. Even better, you can analyze all that log data in real time.

Reference:

<https://cloud.google.com/logging/>

www.shapingpixel.com

26) What is Google Cloud Armor?

- A. a DDoS defense service and web application firewall
- B. a permissions management system for Google Cloud resources
- C. an encryption key management service
- D. a service for storing API keys, passwords, certificates, and other sensitive data

Correct Answer: A

Google Cloud Armor is an enterprise-grade DDoS defense service and web application firewall.

27) 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?

- A. In the Cloud Platform Console, increase the size of the persistent disk and use the resize2fs command in Linux.
- 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

Correct Answer: A

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.

Reference:

<https://cloud.google.com/compute/docs/disks/add-persistent-disk>

28) Your application needs to process credit card transactions. You want the smallest scope of Payment Card Industry (PCI) compliance without compromising the ability to analyze transactional data and trends relating to which payment methods are used.

How should you design your architecture?

- A. Create a tokenizer service and store only tokenized data
- B. Create separate projects that only process credit card data
- C. Create separate subnetworks and isolate the components that process credit card data
- D. Streamline the audit discovery phase by labeling all of the virtual machines (VMs) that process PCI data
- E. Enable Logging export to Google BigQuery and use ACLs and views to scope the data shared with the auditor

Correct Answer: A

29) _____ allows you to use a simple YAML configuration file to define how all your containers interact with each other and with external network connections.

- A. Config Management
- B. **Anthos Service Mesh**
- C. Cloud Run
- D. Anthos on bare metal

Correct Answer: B

While we can quickly end up with dozens or more network end points in between all of our microservices, with Anthos Service Mesh, we can again use a simple YAML configuration file to define how all our containers interact with each other, and with external network connections.

30) You have been asked to select the storage system for the click-data of your company's large portfolio of websites. This data is streamed in from a custom website analytics package at a typical rate of 6,000 clicks per minute. With bursts of up to 8,500 clicks per second. It must have been stored for future analysis by your data science and user experience teams. Which storage infrastructure should you choose?

- A. Google Cloud SQL
- B. Google Cloud Bigtable**
- C. Google Cloud Storage
- D. Google Cloud Datastore

Correct Answer: B

<https://cloud.google.com/storage-options/>

31) You are creating a solution to remove backup files older than 90 days from your backup Cloud Storage bucket. You want to optimize ongoing Cloud Storage spend.
What should you do?

- A. Write a lifecycle management rule in XML and push it to the bucket with gsutil
- B. Write a lifecycle management rule in JSON and push it to the bucket with gsutil**
- C. Schedule a cron script using gsutil ls "€\lrm gs://backups/** to find and remove items older than 90 days
- D. Schedule a cron script using gsutil ls "€\l rm gs://backups/** to find and remove items older than 90 days and schedule it with cron

Correct Answer: B

32) You have built a three-tier application hosting critical workloads which you are planning to host on the Google Cloud Platform. Due to the low budget, the database is designed as a part of the application server. Your manager has asked you to design the infrastructure in a way that follows the Hot Disaster Recovery Pattern. How would you design the architecture?

- A. Deploy one compute engine in one zone, failover to on-premise server.
- B. Deploy two compute engines in two zones each located in different regions.
- C. Deploy two compute engines in two zones each located in the same region.
- D. Deploy two compute engines in two zones each located in the same region but in different projects.

Correct Answer: B

https://cloud.google.com/solutions/dr-scenarios-planning-guide#dr_patterns

33) Your company is forecasting a sharp increase in the number and size of **Apache Spark** and **Hadoop** jobs being run on your local datacenter. You want to utilize the cloud to help you scale this upcoming demand with the least amount of operations work and code change.

Which product should you use?

- A. Google Cloud Dataflow
- B. Google Cloud Dataproc**
- C. Google Compute Engine
- D. Google Kubernetes Engine

Correct Answer: B

Google Cloud Dataproc is a fast, easy-to-use, low-cost and fully managed service that lets you run the Apache Spark and Apache Hadoop ecosystem on Google Cloud Platform. Cloud Dataproc provisions big or small clusters rapidly, supports many popular job types, and is integrated with other Google Cloud Platform services, such as Google Cloud Storage and Stackdriver Logging, thus helping you reduce TCO.

<https://cloud.google.com/dataproc/docs/resources/faq>

34) You are migrating your on-premises data center to Google Compute Engine, and need to calculate the number of vCPUs to support your current Intel Xeon CPU processing workload. Your data center has four servers, each with two dual-core CPUs. How many vCPUs would your instances need in total to support the same workload without compromising performance?

- A. 8
- B. 16
- C. 32
- D. 64

Correct Answer: C

When converting physical server CPUs to Google Compute Engine vCPUs, it is important to remember that vCPU on a Compute Engine instance is implemented as a single hyper-thread on an Intel Xeon Processor. Since each Xeon Processor has two hyper-threads, that means you need to multiply the number of cores by two to get the number of threads, and thus the number of vCPUs. Here are the steps to calculate this:

1. Take the number of servers (4)
 2. Multiply that number by the number of cores per server (4)
 3. Multiply that number by the number of hyper-threads (2)
- 4 servers x 4 cores per server x 2 hyper-threads = 32 vCPUs

35) The database administration team has asked you to help them improve the performance of their new database server running on Google Compute Engine. The database is for importing and normalizing their performance statistics and is built with MySQL running on Debian Linux. They have an n1-standard-8 virtual machine with 80 GB of SSD persistent disk. What should they change to get better performance from this system?

- A. Increase the virtual machine's memory to 64 GB
- B. Create a new virtual machine running PostgreSQL
- C. Dynamically resize the SSD persistent disk to 500 GB
- D. Migrate their performance metrics warehouse to BigQuery
- E. Modify all of their batch jobs to use bulk inserts into the database

Correct Answer: C

36) Anthos has a _____ that checks configuration files and enforces their rules against every Kubernetes API request.

- A. Config Connector
- B. Policy Controller
- C. Service Mesh
- D. Config Knowledge Base

Correct Answer: B

Anthos has a Policy Controller that checks configuration files and enforces their rules against every Kubernetes API request. With this, we can create guardrails for our applications by defining security rules that are enforced on all of our containers across all of our Anthos deployments.

37) You want to optimize the performance of an accurate, real-time, weather-charting application. The data comes from 50,000 sensors sending 10 readings a second, in the format of a timestamp and sensor reading. Where should you store the data?

- A. Google BigQuery
- B. Google Cloud SQL
- C. Google Cloud Bigtable
- D. Google Cloud Storage

Correct Answer: C

Google Cloud **Bigtable** is a scalable, fully-managed **NoSQL** wide-column database that is suitable for both real-time access and analytics workloads.

Good for:

- ⌚ Low-latency read/write access
- ⌚ High-throughput analytics
- ⌚ Native time series support

Common workloads:

- ⌚ IoT, finance, adtech
- ⌚ Personalization, recommendations
- ⌚ Monitoring
- ⌚ Geospatial datasets
- ⌚ Graphs

38) Which of the following statements about Cloud SQL are true? (Select 2 answers)

- A. A Cloud SQL database's capacity must be increased manually.
- B. By default, a Cloud SQL database's capacity is increased automatically when the amount of available space is low.
- C. To prevent runaway growth of a Cloud SQL database's size, you can enable the "Automatic storage increase limit".
- D. There is no limit to the size of a Cloud SQL database.

Correct Answer: BC

<https://cloud.google.com/sql/docs/mysql/instance-settings#automatic-storage-increase-2ndgen>

39) 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?

- 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

Correct Answer: B

40) ____ is a managed microservices platform that allows you to just build your application into a container, then let Google worry about handling all the infrastructure management from there.

- A. Service Mesh
- B. Config Connector
- C. Cloud Build
- D. **Cloud Run**

Correct Answer: D

Cloud Run is a managed microservices platform that allows us to just build our application into a container, then let Google worry about handling all the infrastructure management from there.

41) One of the developers on your team deployed their application in Google Container Engine with the Dockerfile below. They report that their application deployments are taking too long.

```
FROM ubuntu:16.04
COPY . /src
RUN apt-get update && apt-get install -y python python-pip
RUN pip install -r requirements.txt
```

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

- A. Remove Python after running pip
- B. Remove dependencies from requirements.txt
- C. Use a slimmed-down base image like Alpine Linux
- D. Use larger machine types for your Google Container Engine node pools
- E. Copy the source after he package dependencies (Python and pip) are installed

Correct Answer: CE

The speed of deployment can be changed by limiting the size of the uploaded app, limiting the complexity of the build necessary in the Dockerfile, if present, and by ensuring a fast and reliable internet connection.

Note: Alpine Linux is built around musl libc and busybox. This makes it smaller and more resource efficient than traditional GNU/Linux distributions. A container requires no more than 8 MB and a minimal installation to disk requires around 130 MB of storage. Not only do you get a fully-fledged Linux environment but a large selection of packages from the repository.

42) Your company has a lot of distributed applications that need to connect to a database backend. Your chief architect is looking for a way to store and share the credentials of the database securely. She also wants to make sure that there are no unexpected logins and receive alerts on suspicious login activity. What solution would you recommend?

- A. Store the variables as environment variables. Check the audit log of the database for suspicious logins.
- B. Use Secret manager to store credentials. Enable audit logging and check the log for any suspicious logins.
- C. Use Cloud KMS to store the keys. Check the audit log of the database for suspicious logins.
- D. Use Cloud KMS to store the keys. Rotate the keys periodically to avoid any suspicious logins.

Correct Answer: B

<https://cloud.google.com/secret-manager/docs/overview>

43) Your solution is producing performance bugs in production that you did not see in staging and test environments. You want to adjust your test and deployment procedures to avoid this problem in the future. What should you do?

- A. Deploy fewer changes to production
- B. Deploy smaller changes to production
- C. Increase the load on your test and staging environments
- D. Deploy changes to a small subset of users before rolling out to production

Correct Answer: D

44) A small number of API requests to your microservices-based application take a very long time. You know that each request to the API can traverse many services.

You want to know which service takes the longest in those cases.

What should you do?

- A. Set timeouts on your application so that you can fail requests faster
- B. Send custom metrics for each of your requests to Stackdriver Monitoring
- C. Use Stackdriver Monitoring to look for insights that show when your API latencies are high
- D. Instrument your application with Stackdriver Trace in order to break down the request latencies at each microservice

Correct Answer: D

Reference:

https://cloud.google.com/trace/docs/quickstart#find_a_trace

45) A financial data company currently shares data with its clients through desktop software and APIs, but is looking to share a particular dataset with their clients utilizing GCP.

The requirements for sharing this data are as follows:

- Clients should be able to only read the data and not update or modify any data.
- Different clients subscribe to different parts of the data and the company doesn't want to share the whole data set to all the clients.

How should the company design the offering so that it can share the data set with clients for analysis?

- A. Create different data sets for different clients and store them in a bucket. Share each dataset as a read only object with respective clients
- B. Create a bucket for each client with uniform read access. Share the datasets in respective buckets that belong to the clients
- C. Load the dataset into BigQuery. Create views for different clients and give access to views to respective clients
- D. Register as a partner on Google cloud marketplace and upload the dataset as a solution. Redirect clients to access the dataset through the marketplace

Correct Answer: C

<https://cloud.google.com/bigquery/docs/datasets-intro>

46) During a high traffic portion of the day, one of your relational databases crashes, but the replica is never promoted to a master. You want to avoid this in the future.

What should you do?

- A. Use a different database
- B. Choose larger instances for your database
- C. Create snapshots of your database more regularly
- D. Implement routinely scheduled failovers of your databases**

Correct Answer: D

47) Your company has decided to build a backup replica of their on-premises user authentication PostgreSQL database on Google Cloud Platform. The database is 4 TB, and large updates are frequent. Replication requires private address space communication. Which networking approach should you use?

- A. Google Cloud Dedicated Interconnect
- B. Google Cloud VPN connected to the data center network
- C. A NAT and TLS translation gateway installed on-premises
- D. A Google Compute Engine instance with a VPN server installed connected to the data center network

Correct Answer: A

Google Cloud Dedicated Interconnect provides direct physical connections and RFC 1918 communication between your on-premises network and Google's network. Dedicated Interconnect enables you to transfer large amounts of data between networks, which can be more cost effective than purchasing additional bandwidth over the public Internet or using VPN tunnels.

Benefits:

- ☞ Traffic between your on-premises network and your VPC network doesn't traverse the public Internet. Traffic traverses a dedicated connection with fewer hops, meaning there are less points of failure where traffic might get dropped or disrupted.
- ☞ Your VPC network's internal (RFC 1918) IP addresses are directly accessible from your on-premises network. You don't need to use a NAT device or VPN tunnel to reach internal IP addresses. Currently, you can only reach internal IP addresses over a dedicated connection. To reach Google external IP addresses, you must use a separate connection.
- ☞ You can scale your connection to Google based on your needs. Connection capacity is delivered over one or more 10 Gbps Ethernet connections, with a maximum of eight connections (80 Gbps total per interconnect).
- ☞ The cost of egress traffic from your VPC network to your on-premises network is reduced. A dedicated connection is generally the least expensive method if you have a high-volume of traffic to and from Google's network.

Reference:

<https://cloud.google.com/interconnect/docs/details/dedicated> www.shapingpixel.com

48) A global fashion label gets 30% of their revenue from online channels. Their e-commerce website serves customers in multiple geographic regions. They use Cloud CDN to provide a better experience for their users. Their head of e-commerce division thinks that there is an opportunity to reduce the cost of operations of the website. Their CDN costs are a major concern and they are looking for ways to optimize the cost without impacting the user experience. They have asked for your recommendation on how to optimize the CDN costs. (Choose two)

- A. Enable caching for all the common images and non-personalized content
- B. Enable caching for all the content on the e-commerce site
- C. Optimize images by resizing and formatting them appropriately
- D. Use high resolution images for all the content and use multi region cloud storage to store them

Correct Answer: AC

Multi region cloud storage is not an option for this use-case as it might impact the user experience.

Caching should be enabled for common content and not for personalized content - there is no advantage in caching the personalized content as it is likely to be shown to a single user.

Optimizing image size and format will reduce their size and allow for optimal data consumption.

<https://cloud.google.com/blog/products/networking/introducing-lower-simpler-pricing-for-cloud-cdn>

49) Auditors visit your teams every 12 months and ask to review all the Google Cloud Identity and Access Management (Cloud IAM) policy changes in the previous 12 months. You want to streamline and expedite the analysis and audit process.

What should you do?

- A. Create custom Google Stackdriver alerts and send them to the auditor
- B. Enable Logging export to Google BigQuery and use ACLs and views to scope the data shared with the auditor
- C. Use cloud functions to transfer log entries to Google Cloud SQL and use ACLs and views to limit an auditor's view
- D. Enable Google Cloud Storage (GCS) log export to audit logs into a GCS bucket and delegate access to the bucket

Correct Answer: B

50) Your organization is developing a global multi-player game and requires a database that can consistently capture player statistics. The most critical requirement of the database is that it can serve information for game leaderboards and return consistent rankings at any given time across game players all over the world. The game is rapidly developing a following with almost unlimited growth in the number of players.

Which Google Cloud product should the organization choose?

- A. Firestore
- B. **Cloud Spanner**
- C. Cloud SQL
- D. Bare Metal

Correct Answer: B

<https://cloud.google.com/products>

51) You are designing a large distributed application with 30 microservices. Each of your distributed microservices needs to connect to a database back-end. You want to store the credentials securely.
Where should you store the credentials?

- A. In the source code
- B. In an environment variable
- C. In a secret management system
- D. In a config file that has restricted access through ACLs

Correct Answer: C

Reference:

<https://cloud.google.com/kms/docs/secret-management>

52) You have created several pre-emptible Linux virtual machine instances using Google Compute Engine. You want to properly shut down your application before the virtual machines are preempted.
What should you do?

- A. Create a shutdown script named k99.shutdown in the /etc/rc.6.d/ directory
- B. Create a shutdown script registered as a xinetd service in Linux and configure a Stackdriver endpoint check to call the service
- C. Create a shutdown script and use it as the value for a new metadata entry with the key shutdown-script in the Cloud Platform Console when you create the new virtual machine instance**
- D. Create a shutdown script, registered as a xinetd service in Linux, and use the gcloud compute instances add-metadata command to specify the service URL as the value for a new metadata entry with the key shutdown-script-url

Correct Answer: C

A startup script, or a shutdown script, is specified through the metadata server, using startup script metadata keys.

Reference:

<https://cloud.google.com/compute/docs/startupscript>

53) _____ is a VMware product built around Kubernetes that can build and orchestrate containers and manage containers hosted across multiple cloud providers with a single control plane, with support for all major public cloud providers.

- A. OpenShift
- B. OpenStack
- C. vSphere
- D. Tanzu

Correct Answer: D

VMware has their own new product called Tanzu that shares a lot of similar features to Anthos. Tanzu is also built around Kubernetes. It can build and orchestrate containers and can manage containers hosted across multiple cloud providers with a single control plane, with support for all major public cloud providers.

54) Your organization has a 3-tier web application deployed in the same network on Google Cloud Platform. Each tier (web, API, and database) scales independently of the others. Network traffic should flow through the web to the API tier and then on to the database tier. Traffic should not flow between the web and the database tier.

How should you configure the network?

- A. Add each tier to a different subnetwork
- B. Set up software based firewalls on individual VMs
- C. Add tags to each tier and set up routes to allow the desired traffic flow
- D. Add tags to each tier and set up firewall rules to allow the desired traffic flow

Correct Answer: D

Google Cloud Platform(GCP) enforces firewall rules through rules and tags. GCP rules and tags can be defined once and used across all regions.

Reference:

<https://cloud.google.com/docs/compare/openstack/>

<https://aws.amazon.com/it/blogs/aws/building-three-tier-architectures-with-security-groups/>

55) How does Google Cloud suggest that organizations use third-party identity providers to enable users access to Google Cloud with their corporate credentials?

- A. By delegating responsibility to service accounts and groups
- B. By implementing the principle of least privilege
- C. By federating third-party identity providers with Google Cloud
- D. By migrating unmanaged accounts to personal accounts

Correct Answer: C

If the organization uses a third-party identity provider, the organizations' user directory should be synchronized with Cloud Identity to let users access Google Cloud with their corporate credentials.

Delegating responsibility with service accounts and groups is associated with assigning IAM roles, not with enabling a user's access to Google Cloud with their corporate credentials.

The principle of least privilege is not related to enabling users access to Google Cloud with their corporate credentials but with access to resources within Google Cloud.

Migration of unmanaged accounts is required to be implemented when members of the organizational domain have used their corporate email ID to create a personal Google Account.

<https://cloud.google.com/docs/enterprise/best-practices-for-enterprise-organizations#groups-and-service-accounts>

56) Your development team has installed a new Linux kernel module on the batch servers in Google Compute Engine (GCE) virtual machines (VMs) to speed up the nightly batch process. Two days after the installation, 50% of the batch servers failed the nightly batch run. You want to collect details on the failure to pass back to the development team. Which three actions should you take? (Choose three.)

- A. Use Stackdriver Logging to search for the module log entries
- B. Read the debug GCE Activity log using the API or Cloud Console
- C. Use gcloud or Cloud Console to connect to the serial console and observe the logs
- D. Identify whether a live migration event of the failed server occurred, using in the activity log
- E. Adjust the Google Stackdriver timeline to match the failure time, and observe the batch server metrics
- F. Export a debug VM into an image, and run the image on a local server where kernel log messages will be displayed on the native screen

Correct Answer: ACE

57) You are working as a Cloud Security consultant for a Fintech startup. An API is created by the development team to save customer card details so that returning users can save time by using the stored card details. The data is stored in Cloud Datastore. Higher management is looking for a solution to reduce the risk of data breaches from ex-employees of the company. What would you do to secure the data?

- A. Cloud IDS
- B. VPC Service Controls**
- C. Cloud Armor
- D. Event Threat Detection

Correct Answer: B

<https://cloud.google.com/vpc-service-controls/docs/service-perimeters>

58) Your company wants to try out the cloud with low risk. They want to archive approximately 100 TB of their log data to the cloud and test the analytics features available to them there, while also retaining that data as a long-term disaster recovery backup.

Which two steps should you take? (Choose two.)

- A. Load logs into Google BigQuery
- B. Load logs into Google Cloud SQL
- C. Import logs into Google Stackdriver
- D. Insert logs into Google Cloud Bigtable
- E. Upload log files into Google Cloud Storage

Correct Answer: AE

59) A major department store has its ecommerce site deployed in Google Cloud. The ecommerce platform is based on microservice architecture and was developed using multiple programming languages. Due to the distributed nature of the platform, it is very challenging to troubleshoot issues in the production environment. Currently each microservice generates its own log file on a local disk to reduce performance impact. Your team needs to design a solution to allow live troubleshooting in various production environments – GKE, App Engine, and Cloud Function. How do you implement the solution in GCP and test it with minimum business impact?

- A. Install log agent at every microservice and forward the log data into Cloud Logging, use Cloud Logging query to troubleshoot any errors
- B. Use the Cloud logging SDK at every microservice to ingest the log data into Cloud Logging asynchronously, use Cloud Logging query to troubleshoot any errors
- C. Enable Cloud Debugger API and add the debugger support at every microservice with snapshots and logpoints to allow live production troubleshoot
- D. Enable Cloud Debugger API and add the debugger support at every microservice with snapshots and logpoints in canary mode to allow live production troubleshoot

Correct Answer: D

Both Cloud Logging and Cloud Debugger can assist troubleshooting in production, but Cloud Debugger can troubleshoot the code with the logging data in live production, that's something that the log data alone cannot match. The canary mode allows testing the Cloud Debugger in a small number of nodes before rolling it out to all the nodes to reduce the potential business impact in case things don't go as planned.

<https://cloud.google.com/debugger/docs>

60) 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?

- A. Log in to a server, and iterate on the fix locally
- B. Revert the source code change, and rerun the deployment pipeline**
- C. Log into the servers with the bad code change, and swap in the previous code
- D. Change the instance group template to the previous one, and delete all instances

Correct Answer: B

61) You are an architect designing the disaster recover (DR) strategy for an enterprise customer whose solution runs on Google Cloud Platform. Given the mission critical nature of the application, the customer wants low Recovery Point Objective (RPO) and Recovery Time Objective (RTO). The primary deployment site runs in us-central1 with the DR site in europe-west1. Given the short window of RPO and RTO, you are concerned about the time it takes in exporting and importing the snapshots of persistent disks between the primary and DR regions. On further analysis, you learn about a feature of GCE that addresses the concern of the cross-region copy of snapshots. Which feature is that?

- A. Snapshots are global resources in GCE. They are available across all the regions by default.
- B. Google Cloud Platform offers Disaster Recovery as a Service that doesn't require copying the snapshots across regions.
- C. Persistent disks are global resources in GCE. They are available across all the regions by default. The same disk can be mounted on the instances running in primary and DR sites.
- D. Google Developer Console has a scheduler that can automatically copy snapshots between regions.

Correct Answer: A

Snapshots are global resources which means they are available to all the regions globally. This avoids the need to manually export and import snapshots between regions. A snapshot that was taken from a persistent disk attached to an instance in us-central will be instantly available in europe-west.

<https://developers.google.com/compute/docs/overview>

62) Your organization wants to control IAM policies for different departments independently, but centrally. Which approach should you take?

- A. Multiple Organizations with multiple Folders
- B. Multiple Organizations, one for each department
- C. A single Organization with Folders for each department
- D. A single Organization with multiple projects, each with a central owner

Correct Answer: C

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.

Reference:

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

63) You deploy your custom Java application to Google App Engine. It fails to deploy and gives you the following stack trace. What should you do?

- A. Upload missing JAR files and redeploy your application.
- B. Digitally sign all of your JAR files and redeploy your application**
- C. Recompile the CLoakedServlet class using and MD5 hash instead of SHA1

Correct Answer: B

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

64) A global technology firm acquires clients by letting them download reports after submitting a simple online form. They are currently using GCP infrastructure to host their website and content and using cloud storage to store the reports. They observed that clients in some locations are facing issues in downloading the content and they are losing potential clients. They also have observed few users accessing the reports without submitting the form and want to avoid such behavior. What services in GCP should they be using that will help them with the above mentioned problems? (Choose two)

- A. Enable multi-regional storage for cloud storage. This enables the reports to be available in multiple regions.
- B. Enable multi-regional storage with turbo replication for cloud storage. This enables the reports to be available in multiple regions.
- C. Use signed urls with limited expiry time to give access to the reports
- D. Enable Cloud CDN for the cloud storage where the reports are stored

Correct Answer: CD

Signed urls are temporary urls that will prevent users from sharing the static url to access the content.

CDNs help in distributing the content globally without replicating them in multiple cloud storage locations.

Multi-region storage will not necessarily help improve performance, so these choices are incorrect.

https://cloud.google.com/cdn/docs/overview?hl=en&skip_cache=true

65) 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?

- A. Tag messages client side with the originating user identifier and the destination user.
- B. Encrypt the message client side using block-based encryption with a shared key.
- C. Use public key infrastructure (PKI) to encrypt the message client side using the originating user's private key.
- D. Use a trusted certificate authority to enable SSL connectivity between the client application and the server.

Correct Answer: C

66) 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?

- A. Configure their replication to use UDP.
- B. Configure a Google Cloud Dedicated Interconnect.**
- C. Restore their database daily using Google Cloud SQL.
- D. Add additional VPN connections and load balance them.
- E. Send the replicated transaction to Google Cloud Pub/Sub.

Correct Answer: B

67) You are working in a fast-growing organization that has its business-critical applications hosted in GCP. As your users' engagement is increasing, cloud infrastructure requirements are also increasing. You are planning to configure additional infrastructure for another project using reserved instances to get a discount. You would need to set up networks, and all other resources required to host a basic web application. Due to a lack of employees, you need an easy way to continuously re-deploy certain infrastructure. What's the best way to do this?

- A. Use Forseti Security to get configuration details from existing projects.
- B. Make use of Cloud Deployment Manager.
- C. Create resources one by one.
- D. Use Asset History from Resource Manager.

Correct Answer: B

Infrastructure as a Code helps you deploy the same architecture with the same configuration within a few minutes. You won't even have to review using Cloud Deployment Manager's IAC feature. You have to create an infrastructure template for the first time, and later on, you can use it directly.

The other choices are incorrect for the following reasons:

- Individually creating resources and using asset history both assist in viewing existing infrastructure configurations, but they do not help duplicate existing infrastructure.
- Creating resources one by one will be a time taking process, and there are chances of mistakes in the manual process.
- <https://cloud.google.com/recommender/docs/tutorial-iac>

68) 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?

- A. Hash all data using SHA256
- B. Encrypt all data using elliptic curve cryptography
- C. De-identify the data with the Cloud Data Loss Prevention API
- D. Use regular expressions to find and redact phone numbers, email addresses, and credit card numbers

Correct Answer: C

Reference:

https://cloud.google.com/solutions/pci-dss-compliance-in-gcp#using_data_loss_prevention_api_to_sanitize_data

69) 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
- B. Cloud Storage
- C. /google/scripts
- D. /usr/local/bin

Correct Answer: A

70) A global insurance company that uses Google Cloud Platform plans for its employees to work from home. It has requested a scalable, cost-effective solution that can enable encrypted desktop streaming so that employees can access corporate resources. Which of the following would you recommend?

- A. Google workspace
- B. Google Cloud Virtual Desktop**
- C. Create an encrypted connection to the office network
- D. Enable Remote Desktop Protocol (RDP) to connect to remote desktops

Correct Answer: *B*

<https://cloud.google.com/solutions/virtual-desktops>

71) 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.
- B. Create a VPC and connect it to your on-premises data center using a single Cloud VPN.
- C. Create a Cloud Content Delivery Network (Cloud CDN) and connect it to your on-premises data center using Dedicated Interconnect.
- D. Create a Cloud Content Delivery Network (Cloud CDN) and connect it to your on-premises datacenter using a single Cloud VPN.

Correct Answer: A

72) Your company is using GCP Compute Engine to host its applications where one such application has a number of unauthenticated REST API calls. One of the users has located the URL of one such API call, which when repeatedly executed, crashed the Compute Engine instance. The instance was down for almost 3 hours and disrupted business for the whole company.

What would you do to make sure that next time this happens, you are notified immediately if CPU usage goes above 90 percent?

- A. Choose an Alerting Policy based on Process health in Cloud Monitoring
- B. Choose an Alerting Policy based on metric rate in Cloud Monitoring**
- C. Choose an Alerting Policy based on uptime check in Cloud Monitoring
- D. Create a script in your VM Instance to track the CPU Usage and trigger the notification if usage goes above defined threshold.

Correct Answer: B

<https://cloud.google.com/monitoring/alerts/types-of-conditions>

73) 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 cost management.
- B. Utilize free tier and sustained use discounts. Provide training to the team about service cost management.**
- C. Utilize free tier and committed use discounts. Provision a staff position for service cost management.
- D. Utilize free tier and committed use discounts. Provide training to the team about service cost management.

Correct Answer: B

74) 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 before deploying to production. What should you do?

- A. Use Spinnaker to deploy builds to production using the red/black deployment strategy so that changes can easily be rolled back.
- B. Use Spinnaker to deploy builds to production and run tests on production deployments.
- C. Use Jenkins to build the staging branches and the master branch. Build and deploy changes to production for 10% of users before doing a complete rollout.
- D. Use Jenkins to monitor tags in the repository. Deploy staging tags to a staging environment for testing. After testing, tag the repository for production and deploy that to the production environment.

Correct Answer: D

Reference:

<https://github.com/GoogleCloudPlatform/continuous-deployment-on-kubernetes/blob/master/README.md>

75) Your Company is managing a supply chain product globally accessible. The company has several partners across different countries that need to access BigQuery country-specific tables for historic data analysis for each country. What should you do to guarantee that each partner access only their specific tables on BigQuery without altering the data?

- A. Create a single dataset for all the countries, grant the role roles/bigquery.metadataViewer at table table-level for each country-specific tables for each partner
- B. Create a single dataset for all the countries, grant the role roles/bigquery.dataViewer at table table-level for each country specific tables for each partner**
- C. Create a single dataset for all the countries, grant the role roles/bigquery.dataOwner at table table-level for each country specific tables for each partner
- D. Create a single dataset for all the countries, grant the role roles/bigquery.dataEditor at table table-level for each country specific tables for each partner

Correct Answer: B

<https://cloud.google.com/bigquery/docs/table-access-controls-intro>

76) You have an outage in your Compute Engine managed instance group: all instances 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. Grant your colleague the IAM role of project Viewer
- B. Perform a rolling restart on the instance group
- C. Disable the health check for the instance group. Add his SSH key to the project-wide SSH Keys
- D. Disable autoscaling for the instance group. Add his SSH key to the project-wide SSH Keys

Correct Answer: C

77) Your company is migrating its on-premises data center into the cloud. As part of the migration, you want to integrate Google Kubernetes Engine (GKE) for workload orchestration. Parts of your architecture must also be PCI DSS-compliant. Which of the following is most accurate?

- A. App Engine is the only compute platform on GCP that is certified for PCI DSS hosting.
- B. GKE cannot be used under PCI DSS because it is considered shared hosting.
- C. GKE and GCP provide the tools you need to build a PCI DSS-compliant environment.**
- D. All Google Cloud services are usable because Google Cloud Platform is certified PCI-compliant.

Correct Answer: C

78) You are working as a Security Consultant in an organization. Your manager has asked you to ensure that packages in container images are updated, and any images with security issues should not be pushed to your live Google Kubernetes Engine environment. Which of the following services would you use?

- A. Deployment strategies
- B. Binary Authorization
- C. Vulnerability Scanning
- D. Vulnerability Scanning with Binary Authorization

Correct Answer: D

Vulnerability Scans along with Binary Authorization will prevent deployment of any package with security issues.

The remaining choices are incorrect for the following reasons:

- Deployment strategies are for application deployment where you should follow recreate, rolling update, or blue/green strategy to deploy the application. It helps in upgrading the application without making it offline.
- Binary authorization is a security measure that comes into play while deploying the package; it will not let you deploy the package with known security issues.
- Vulnerability scanning will only scan for the issues, but anyone can still deploy it.

<https://cloud.google.com/architecture/implementing-deployment-and-testing-strategies-on-gke>

79) 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 Datalab to explore and clean your data.
- B. Upload your files into Cloud Storage. Use Cloud Dataprep to explore and clean your data.**
- C. Connect Cloud Datalab to your on-premises systems. Use Cloud Datalab to explore and clean your data.
- D. Connect Cloud Dataprep to your on-premises systems. Use Cloud Dataprep to explore and clean your data.

Correct Answer: B

80) 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?

- A. The effective policy is determined only by the policy set at the node
- B. The effective policy is the policy set at the node and restricted by the policies of its ancestors
- C. The effective policy is the union of the policy set at the node and policies inherited from its ancestors
- D. The effective policy is the intersection of the policy set at the node and policies inherited from its ancestors

Correct Answer: C

Reference:

<https://cloud.google.com/resource-manager/docs/cloud-platform-resource-hierarchy>

81) 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-premise systems remain reachable during this period. How should you organize your networking in Google Cloud?

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

Correct Answer: C

82) 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
- B. Upload the configuration file to App Engine's default Cloud Storage bucket, and have App Engine detect the new indexes
- C. In the GCP Console, use Datastore Admin to delete the current indexes and upload the new configuration file
- D. Create an HTTP request to the built-in python module to send the index configuration file to your application

Correct Answer: A

83) 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?

- A. Deploy the application on two Compute Engine instances in the same project but in a different region. Use the first instance to serve traffic, and use the HTTP load balancing service to fail over to the standby instance in case of a disaster.
- B. Deploy the application on a Compute Engine instance. Use the instance to serve traffic, and use the HTTP load balancing service to fail over to an instance on your premises in case of a disaster.
- 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.**
- D. Deploy the application on two Compute Engine instance groups, each in a separate project and 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.

Correct Answer: C

84) 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?

- A. Deploy your application on App Engine standard environment and use App Engine firewall rules to limit access to the open on-premises database.
- B. Deploy your application on App Engine standard environment and use Cloud VPN to limit access to the on-premises database.
- C. Deploy your application on App Engine flexible environment and use App Engine firewall rules to limit access to the on-premises database.
- D. Deploy your application on App Engine flexible environment and use Cloud VPN to limit access to the on-premises database.**

Correct Answer: D

85) 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.
- B. Upload the required installation files to Cloud Storage and use firewall rules to block all traffic except the IP address range for Cloud Storage. Download the files to the VM using gsutil.
- C. Upload the required installation files to Cloud Source Repositories. 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 gcloud.
- D. Upload the required installation files to Cloud Source Repositories and use firewall rules to block all traffic except the IP address range for Cloud Source Repositories. Download the files to the VM using gsutil.

Correct Answer: A

86) 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?

- A. Move your data onto a Transfer Appliance. Use a Transfer Appliance Rehydrator to decrypt the data into Cloud Storage.
- B. Move your data onto a Transfer Appliance. Use Cloud Dataprep to decrypt the data into Cloud Storage.
- C. Install gsutil on each server that contains data. Use resumable transfers to upload the data into Cloud Storage.
- D. Install gsutil on each server containing data. Use streaming transfers to upload the data into Cloud Storage.

Correct Answer: A

87) You have an application deployed on Google Kubernetes Engine using a Deployment named echo-deployment. 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?

- A. Use kubectl set image deployment/echo-deployment <new-image>
- B. Use the rolling update functionality of the Instance Group behind the Kubernetes cluster
- C. Update the deployment yaml file with the new container image. Use kubectl delete deployment/echo-deployment and kubectl create ">f <yaml-file>"
- D. Update the service yaml file which the new container image. Use kubectl delete service/echo-service and kubectl create ">f <yaml-file>"

Correct Answer: A

88) 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?

- A. Add all users to a group. Grant the group the role of BigQuery user on the billing project and BigQuery dataViewer on the projects that contain the data.
- B. Add all users to a group. Grant the group the roles of BigQuery dataViewer on the billing project and BigQuery user on the projects that contain the data.
- 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.
- D. Add all users to a group. Grant the group the roles of BigQuery dataViewer on the billing project and BigQuery jobUser on the projects that contain the data.

Correct Answer: C

89) 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?

- A. Have users upload the images to Cloud Storage. Protect the bucket with a password that expires after 24 hours.
- B. Have users upload the images to Cloud Storage using a signed URL that expires after 24 hours.**
- C. Create an App Engine web application where users can upload images. Configure App Engine to disable the application after 24 hours. Authenticate users via Cloud Identity.
- D. Create an App Engine web application where users can upload images for the next 24 hours. Authenticate users via Cloud Identity.

Correct Answer: B

90) 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?

- A. Ensure that your web application only uses native features and services of Google Cloud Platform, because Google already has various certifications and provides pass-on compliance when you use native features.
- B. Enable the relevant GDPR compliance setting within the GCPConsole for each of the services in use within your application.
- C. Ensure that Cloud Security Scanner is part of your test planning strategy in order to pick up any compliance gaps.
- D. Define a design for the security of data in your web application that meets GDPR requirements.**

Correct Answer: D

Reference:

<https://www.mobiloud.com/blog/gdpr-compliant-mobile-app/>

91) 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?

- A. Configure a Cloud SQL instance with high availability enabled.
- B. Configure a Cloud Spanner instance with a regional instance configuration.
- C. Set up SQL Server on Compute Engine, using Always On Availability Groups using Windows Failover Clustering. Place nodes in different subnets.
- D. Set up SQL Server Always On Availability Groups using Windows Failover Clustering. Place nodes in different zones.**

Correct Answer: D

92) 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?

- A. Use gcloud to create a Kubernetes cluster. Use Deployment Manager to create the deployment.
- B. Use gcloud to create a Kubernetes cluster. Use kubectl to create the deployment.**
- C. Use kubectl to create a Kubernetes cluster. Use Deployment Manager to create the deployment.
- D. Use kubectl to create a Kubernetes cluster. Use kubectl to create the deployment.

Correct Answer: B

93) 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
- B. Compute Engine
- C. Google Kubernetes Engine
- D. AppEngine flexible environment

Correct Answer: A

94) 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
- B. Create the Key object for each Entity and run multiple get operations, one operation for each entity
- C. Use the identifiers to create a query filter and run a batch query operation
- D. Use the identifiers to create a query filter and run multiple query operations, one operation for each entity

Correct Answer: A

95) 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.
- B. Supply the encryption key using gcloud config. Use gsutil to upload the files to that bucket.
- C. Use gsutil to upload the files, and use the flag --encryption-key to supply the encryption key.
- D. Use gsutil to create a bucket, and use the flag --encryption-key to supply the encryption key. Use gsutil to upload the files to that bucket.

Correct Answer: A

96) 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.
- B. Output custom metrics to Stackdriver from the game servers, and create a Dashboard in Stackdriver Monitoring Console to view them.**
- C. Schedule BigQuery load jobs to ingest analytics files uploaded to Cloud Storage every ten minutes, and visualize the results in Google Data Studio.
- D. Insert the KPIs into Cloud Datastore entities, and run ad hoc analysis and visualizations of them in Cloud Datalab.

Correct Answer: B

Reference:

<https://cloud.google.com/solutions/data-lifecycle-cloud-platform>

97) Your company wants to start using Google Cloud resources but wants to retain their on-premises Active Directory domain controller for identity management.

What should you do?

- A. Use the Admin Directory API to authenticate against the Active Directory domain controller.
- B. Use Google Cloud Directory Sync to synchronize Active Directory usernames with cloud identities and configure SAML SSO.**
- C. Use Cloud Identity-Aware Proxy configured to use the on-premises Active Directory domain controller as an identity provider.
- D. Use Compute Engine to create an Active Directory (AD) domain controller that is a replica of the on-premises AD domain controller using Google Cloud Directory Sync.

Correct Answer: B

98) You are running a cluster on Kubernetes Engine (GKE) 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?

- A. Review the Stackdriver logs for each Compute Engine instance that is serving as a node in the cluster.
- B. Review the Stackdriver logs for the specific GKE container that is serving the unresponsive part of the application.**
- C. Connect to the cluster using gcloud credentials and connect to a container in one of the pods to read the logs.
- D. Review the Serial Port logs for each Compute Engine instance that is serving as a node in the cluster.

Correct Answer: B

99) 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?

- A. Create a read replica instance in a different region
- B. Create a failover replica instance in a different region
- C. Create a read replica instance in the same region, but in a different zone
- D. Create a failover replica instance in the same region, but in a different zone

Correct Answer: D

100) 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?

- A. Create a snapshot of the existing disk. Create an instance template from the snapshot. Create an autoscaled managed instance group from the instance template.
- B. Create a snapshot of the existing disk. Create a custom image from the snapshot. Create an autoscaled managed instance group from the custom image.
- 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.
- D. Create an instance template from the existing disk. Create a custom image from the instance template. Create an autoscaled managed instance group from the custom image.

Correct Answer: C

101) 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?

- A. Use separate VPCs to restrict traffic
- B. Use firewall rules based on network tags attached to the compute instances**
- C. Use Cloud DNS and only allow connections from authorized hostnames
- D. Use service accounts and configure the web application to authorize particular service accounts to have access

Correct Answer: B

102) 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 time.
- B. 1. Enable automatic storage increase for the instance. 2. Change the instance type to a 32-core machine type to keep CPU usage below 75%. 3. Create a Stackdriver alert for replication lag, and deploy memcache to reduce load on the master.
- C. 1. Create a Stackdriver alert when storage exceeds 75%, and increase the available storage on the instance to create more space. 2. Deploy memcached to reduce CPU load. 3. Change the instance type to a 32-core machine type to reduce replication lag.
- D. 1. Create a Stackdriver alert when storage exceeds 75%, and increase the available storage on the instance to create more space. 2. Deploy memcached to reduce CPU load. 3. Create a Stackdriver alert for replication lag, and change the instance type to a 32-core machine type to reduce replication lag.

Correct Answer: A

103) 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?

- A. Cloud Spanner, because it is globally distributed
- B. Cloud SQL, because it is a fully managed relational database
- C. Cloud Firestore, because it offers real-time synchronization across devices
- D. BigQuery, because it is designed for large-scale processing of tabular data

Correct Answer: D

Reference:

<https://cloud.google.com/files/BigQueryTechnicalWP.pdf>

104) You have deployed an application to Google Kubernetes Engine (GKE), 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?

- A. Use gcloud sql instances restart.
- B. Validate that the Service Account used by the Cloud SQL proxy container still has the Cloud Build Editor role.
- C. In the GCP Console, navigate to Stackdriver Logging. Consult logs for (GKE) and Cloud SQL.**
- D. In the GCP Console, navigate to Cloud SQL. Restore the latest backup. Use kubectl to restart all pods.

Correct Answer: C

105) 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.
- B. Ensure that VM service accounts do not have access to Cloud Pub/Sub, and use VM access scopes to grant the appropriate Cloud Pub/Sub IAM roles.
- C. Generate an OAuth2 access token for accessing Cloud Pub/Sub, encrypt it, and store it in Cloud Storage for access from each VM.
- D. Create a gateway to Cloud Pub/Sub using a Cloud Function, and grant the Cloud Function service account the appropriate Cloud Pub/Sub IAM roles.

Correct Answer: A

106) 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?

- A. Use VPC Network Peering between the VPC and the on-premises network.
- B. Expose the VPC to the on-premises network using IAM and VPC Sharing.
- C. Create a global Cloud VPN Gateway with VPN tunnels from each region to the on-premises peer gateway.
- D. Deploy Cloud VPN Gateway in each region. Ensure that each region has at least one VPN tunnel to the on-premises peer gateway.

Correct Answer: D

107) 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?

- A. Configure the expiration time for your tables at 45 days
- B. Make the tables time-partitioned, and configure the partition expiration at 45 days**
- C. Rely on BigQuery's default behavior to prune application logs older than 45 days
- D. Create a script that uses the BigQuery command line tool (bq) to remove records older than 45 days

Correct Answer: B

108) You want your Google Kubernetes Engine cluster to automatically add or remove nodes based on CPU load. What should you do?

- A. Configure a HorizontalPodAutoscaler with a target CPU usage. Enable the Cluster Autoscaler from the GCP Console.
- B. Configure a HorizontalPodAutoscaler with a target CPU usage. Enable autoscaling on the managed instance group for the cluster using the gcloud command.
- C. Create a deployment and set the maxUnavailable and maxSurge properties. Enable the Cluster Autoscaler using the gcloud command.
- D. Create a deployment and set the maxUnavailable and maxSurge properties. Enable autoscaling on the cluster managed instance group from the GCP Console.

Correct Answer: A

109) 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?

- 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.
- B. Verify that Dedicated Interconnect can replicate files to GCP. Verify that Cloud VPN can establish a secure connection between your networks if Dedicated Interconnect fails.**
- C. Verify that the Transfer Appliance can replicate files to GCP. Verify that direct peering can establish a secure connection between your networks if the Transfer Appliance fails.
- D. Verify that the Transfer Appliance can replicate files to GCP. Verify that Cloud VPN can establish a secure connection between your networks if the Transfer Appliance fails.

Correct Answer: B

110) 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?

- A. Provision preemptible VMs to reduce cost. Discontinue use of all GCP services and APIs that are not HIPAA-compliant.
- B. Provision preemptible VMs to reduce cost. Disable and then discontinue use of all GCP services and APIs that are not HIPAA-compliant.**
- C. Provision standard VMs in the same region to reduce cost. Discontinue use of all GCP services and APIs that are not HIPAA-compliant.
- D. Provision standard VMs to the same region to reduce cost. Disable and then discontinue use of all GCP services and APIs that are not HIPAA-compliant.

Correct Answer: B

111) You want to automate the creation of a managed instance group. The VMs have many OS package dependencies. You want to minimize the startup time for new VMs in the instance group.
What should you do?

- A. Use Terraform to create the managed instance group and a startup script to install the OS package dependencies.
- B. Create a custom VM image with all OS package dependencies. Use Deployment Manager to create the managed instance group with the VM image.**
- C. Use Puppet to create the managed instance group and install the OS package dependencies.
- D. Use Deployment Manager to create the managed instance group and Ansible to install the OS package dependencies.

Correct Answer: B

112) Your company captures all web traffic data in Google Analytics 360 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?

- 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_analysts' group the IAM role of BigQuery jobUser. Share the appropriate dataset with view access with each respective analyst country-group.
- B. 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_analysts' group the IAM role of BigQuery jobUser. Share the appropriate tables with view access with each respective analyst country-group.
- C. 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_analysts' group the IAM role of BigQuery dataViewer. Share the appropriate dataset with view access with each respective analyst country-group.
- D. 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_analysts' group the IAM role of BigQuery dataViewer. Share the appropriate table with view access with each respective analyst country-group.

Correct Answer: A

113) 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?

- A. StatefulSets
- B. Role-based access control
- C. Container environment variables
- D. Persistent Volumes

Correct Answer: A

114) 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?

- A. Customize the cache keys to omit the protocol from the key.
- B. Shorten the expiration time of the cached objects.
- C. Make sure the HTTP(S) header Cache-Region points to the closest region of your users.
- D. Replicate the static content in a Cloud Storage bucket. Point CloudCDN toward a load balancer on that bucket.

Correct Answer: A

Reference:

https://cloud.google.com/cdn/docs/best-practices#using_custom_cache_keys_to_improve_cache_hit_ratio

115) 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?

- A. All admin and VM system logs are automatically collected by Stackdriver.
- B. Stackdriver automatically collects admin activity logs for most services. The Stackdriver Logging agent must be installed on each instance to collect system logs.**
- C. Launch a custom syslogd compute instance and configure your GCP project and VMs to forward all logs to it.
- D. Install the Stackdriver Logging agent on a single compute instance and let it collect all audit and access logs for your environment.

Correct Answer: B

116) 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?

- A. Deploy the update using the Instance Group Updater to create a partial rollout, which allows for canary testing.
- B. Deploy the update as a new version in the App Engine application, and split traffic between the new and current versions.**
- C. Deploy the update in a new VPC, and use Google's global HTTP load balancing to split traffic between the update and current applications.
- 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.

Correct Answer: B

117) 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?

- 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.
- B. Create an egress rule with priority 100 to deny all traffic for all instances. Create another egress rule with priority 1000 to allow the Active Directory traffic for all instances.
- C. Create an egress rule with priority 1000 to allow the Active Directory traffic. Rely on the implied deny egress rule with priority 100 to block all traffic for all instances.
- D. Create an egress rule with priority 100 to allow the Active Directory traffic. Rely on the implied deny egress rule with priority 1000 to block all traffic for all instances.

Correct Answer: A

118) 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?

- A. Export Cloud Machine Learning Engine performance metrics from Stackdriver to BigQuery, to be used to analyze the efficiency of the model.
- B. Build a roadmap to move the machine learning model training from Cloud GPUs to Cloud TPUs, which offer better results.
- C. Monitor Compute Engine announcements for availability of newer CPU architectures, and deploy the model to them as soon as they are available for additional performance.
- D. Save a history of recommendations and results of the recommendations in BigQuery, to be used as training data.

Correct Answer: D

119) 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?

- A. Create a cross-region load balancer with URL Maps.
- B. Create an HTTPS load balancer with URL Maps.**
- C. Create appropriate instance groups and instances. Configure SSL proxy load balancing.
- D. Create a global forwarding rule. Configure SSL proxy load balancing.

Correct Answer: B

Reference:

<https://cloud.google.com/load-balancing/docs/https/url-map>

120) 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?

- A. Use gRPC instead of HTTP for better performance.
- B. Implement retry logic using a truncated exponential backoff strategy.**
- C. Make sure the Cloud Storage bucket is multi-regional for geo-redundancy.
- D. Monitor <https://status.cloud.google.com/feed.atom> and only make requests if Cloud Storage is not reporting an incident.

Correct Answer: B

121) 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?

- A. Use Deployment Manager to automate service provisioning. Use Activity Logs to monitor and debug your tests.
- B. Use Deployment Manager to automate service provisioning. Use Stackdriver to monitor and debug your tests.**
- C. Use gcloud scripts to automate service provisioning. Use Activity Logs to monitor and debug your tests.
- D. Use gcloud scripts to automate service provisioning. Use Stackdriver to monitor and debug your tests.

Correct Answer: B

122) 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?

- A. Store the data in Google Drive and manually delete records as they expire.
- B. Anonymize the data using the Cloud Data Loss Prevention API and store it indefinitely.
- C. Store the data in Cloud Storage and use lifecycle management to delete files when they expire.
- D. Store the data in Cloud Storage and run a nightly batch script that deletes all expired data.

Correct Answer: C

123) You are deploying a PHP App Engine Standard service with Cloud SQL as the backend. You want to minimize the number of queries to the database.

What should you do?

- 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.
- B. Set the memcache service level to dedicated. Create a cron task that runs every minute to populate the cache with keys containing query results.
- C. Set the memcache service level to shared. Create a cron task that runs every minute to save all expected queries to a key called `cached_queries`.
- D. Set the memcache service level to shared. Create a key called `cached_queries`, and return database values from the key before using a query to Cloud SQL.

Correct Answer: A

124) You need to ensure reliability for your application and operations by supporting reliable task scheduling for compute on GCP. Leveraging Google best practices, what should you do?

- A. Using the Cron service provided by App Engine, publish messages directly to a message-processing utility service running on Compute Engine instances.
- 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.

Correct Answer: B

125) 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?

- A. Compress and upload both archived files and files uploaded daily using the gsutil "cp" option.
- B. Lease a Transfer Appliance, upload archived files to 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.**
- C. Lease a Transfer Appliance, upload archived files to 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 compress and upload files daily using the gsutil "cp" 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.

Correct Answer: B

126) Your company is planning to perform a lift and shift migration of their Linux RHEL 6.5+ virtual machines. The virtual machines are running in an on-premises VMware environment. You want to migrate them to Compute Engine following Google-recommended practices. What should you do?

- A. 1. Define a migration plan based on the list of the applications and their dependencies. 2. Migrate all virtual machines into Compute Engine individually with Migrate for Compute Engine.
- B. 1. Perform an assessment of virtual machines running in the current VMware environment. 2. Create images of all disks. Import disks on Compute Engine. 3. Create standard virtual machines where the boot disks are the ones you have imported.
- C. 1. Perform an assessment of virtual machines running in the current VMware environment. 2. Define a migration plan, prepare a Migrate for Compute Engine migration RunBook, and execute the migration.**
- D. 1. Perform an assessment of virtual machines running in the current VMware environment. 2. Install a third-party agent on all selected virtual machines. 3. Migrate all virtual machines into Compute Engine.

Correct Answer: C

127) You need to deploy an application to Google Cloud. The application receives traffic via TCP and reads and writes data to the filesystem. The application does not support horizontal scaling. The application process requires full control over the data on the file system because concurrent access causes corruption. The business is willing to accept a downtime when an incident occurs, but the application must be available 24/7 to support their business operations. You need to design the architecture of this application on Google Cloud. What should you do?

- A. Use a managed instance group with instances in multiple zones, use Cloud Filestore, and use an HTTP load balancer in front of the instances.
- B. Use a managed instance group with instances in multiple zones, use Cloud Filestore, and use a network load balancer in front of the instances.
- C. Use an unmanaged instance group with an active and standby instance in different zones, use a regional persistent disk, and use an HTTP load balancer in front of the instances.
- D. Use an unmanaged instance group with an active and standby instance in different zones, use a regional persistent disk, and use a network load balancer in front of the instances.

Correct Answer: D

Reference:

<https://cloud.google.com/compute/docs/instance-groups>

128) Your company has an application running on multiple Compute Engine instances. You need to ensure that the application can communicate with an on-premises service that requires high throughput via internal IPs, while minimizing latency. What should you do?

- A. Use OpenVPN to configure a VPN tunnel between the on-premises environment and Google Cloud.
- B. Configure a direct peering connection between the on-premises environment and Google Cloud.
- C. Use Cloud VPN to configure a VPN tunnel between the on-premises environment and Google Cloud.
- D. Configure a Cloud Dedicated Interconnect connection between the on-premises environment and Google Cloud.**

Correct Answer: D

129) You are implementing a single Cloud SQL MySQL second-generation database that contains business-critical transaction data. You want to ensure that the minimum amount of data is lost in case of catastrophic failure. Which two features should you implement? (Choose two.)

- A. Sharding
- B. Read replicas
- C. Binary logging
- D. Automated backups
- E. Semisynchronous replication

Correct Answer: CD

130) You are working at a sports association whose members range in age from 8 to 30. The association collects a large amount of health data, such as sustained injuries. You are storing this data in BigQuery. Current legislation requires you to delete such information upon request of the subject. You want to design a solution that can accommodate such a request. What should you do?

- A. Use a unique identifier for each individual. Upon a deletion request, delete all rows from BigQuery with this identifier.
- B. When ingesting new data in BigQuery, run the data through the Data Loss Prevention (DLP) API to identify any personal information. As part of the DLP scan, save the result to Data Catalog. Upon a deletion request, query Data Catalog to find the column with personal information.
- C. Create a BigQuery view over the table that contains all data. Upon a deletion request, exclude the rows that affect the subject's data from this view. Use this view instead of the source table for all analysis tasks.
- D. Use a unique identifier for each individual. Upon a deletion request, overwrite the column with the unique identifier with a salted SHA256 of its value.

Correct Answer: B

131) Your company has announced that they will be outsourcing operations functions. You want to allow developers to easily stage new versions of a cloud-based application in the production environment and allow the outsourced operations team to autonomously promote staged versions to production. You want to minimize the operational overhead of the solution. Which Google Cloud product should you migrate to?

- A. App Engine
- B. GKE On-Prem
- C. Compute Engine
- D. Google Kubernetes Engine**

Correct Answer: D

132) Your company is running its application workloads on Compute Engine. The applications have been deployed in production, acceptance, and development environments. The production environment is business-critical and is used 24/7, while the acceptance and development environments are only critical during office hours. Your CFO has asked you to optimize these environments to achieve cost savings during idle times. What should you do?

- A. Create a shell script that uses the gcloud command to change the machine type of the development and acceptance instances to a smaller machine type outside of office hours. Schedule the shell script on one of the production instances to automate the task.
- B. Use Cloud Scheduler to trigger a Cloud Function that will stop the development and acceptance environments after office hours and start them just before office hours.**
- C. Deploy the development and acceptance applications on a managed instance group and enable autoscaling.
- D. Use regular Compute Engine instances for the production environment, and use preemptible VMs for the acceptance and development environments.

Correct Answer: B

Reference:

<https://cloud.google.com/blog/products/it-ops/best-practices-for-optimizing-your-cloud-costs>

133) You are moving an application that uses MySQL from on-premises to Google Cloud. The application will run on Compute Engine and will use Cloud SQL. You want to cut over to the Compute Engine deployment of the application with minimal downtime and no data loss to your customers. You want to migrate the application with minimal modification. You also need to determine the cutover strategy. What should you do?

- A. 1. Set up Cloud VPN to provide private network connectivity between the Compute Engine application and the on-premises MySQL server. 2. Stop the on-premises application. 3. Create a mysqldump of the on-premises MySQL server. 4. Upload the dump to a Cloud Storage bucket. 5. Import the dump into Cloud SQL. 6. Modify the source code of the application to write queries to both databases and read from its local database. 7. Start the Compute Engine application. 8. Stop the on-premises application.
- B. 1. Set up Cloud SQL proxy and MySQL proxy. 2. Create a mysqldump of the on-premises MySQL server. 3. Upload the dump to a Cloud Storage bucket. 4. Import the dump into Cloud SQL. 5. Stop the on-premises application. 6. Start the Compute Engine application.
- C. 1. Set up Cloud VPN to provide private network connectivity between the Compute Engine application and the on-premises MySQL server. 2. Stop the on-premises application. 3. Start the Compute Engine application, configured to read and write to the on-premises MySQL server. 4. Create the replication configuration in Cloud SQL. 5. Configure the source database server to accept connections from the Cloud SQL replica. 6. Finalize the Cloud SQL replica configuration. 7. When replication has been completed, stop the Compute Engine application. 8. Promote the Cloud SQL replica to a standalone instance. 9. Restart the Compute Engine application, configured to read and write to the Cloud SQL standalone instance.
- D. 1. Stop the on-premises application. 2. Create a mysqldump of the on-premises MySQL server. 3. Upload the dump to a Cloud Storage bucket. 4. Import the dump into Cloud SQL. 5. Start the application on Compute Engine.

Correct Answer: C

134) Your organization has decided to restrict the use of external IP addresses on instances to only approved instances. You want to enforce this requirement across all of your Virtual Private Clouds (VPCs). What should you do?

- A. Remove the default route on all VPCs. Move all approved instances into a new subnet that has a default route to an internet gateway.
- B. Create a new VPC in custom mode. Create a new subnet for the approved instances, and set a default route to the internet gateway on this new subnet.
- C. Implement a Cloud NAT solution to remove the need for external IP addresses entirely.
- D. Set an Organization Policy with a constraint on constraints/compute.vmExternalIpAccess. List the approved instances in the allowedValues list.**

Correct Answer: D

Reference:

<https://cloud.google.com/compute/docs/ip-addresses/reserve-static-external-ip-address>

135) Your company uses the Firewall Insights feature in the Google Network Intelligence Center. You have several firewall rules applied to Compute Engine instances.

You need to evaluate the efficiency of the applied firewall ruleset. When you bring up the Firewall Insights page in the Google Cloud Console, you notice that there are no log rows to display. What should you do to troubleshoot the issue?

- A. Enable Virtual Private Cloud (VPC) flow logging.
- B. Enable Firewall Rules Logging for the firewall rules you want to monitor.**
- C. Verify that your user account is assigned the compute.networkAdmin Identity and Access Management (IAM) role.
- D. Install the Google Cloud SDK, and verify that there are no Firewall logs in the command line output.

Correct Answer: B

Reference:

<https://cloud.google.com/network-intelligence-center/docs/firewall-insights/how-to/using-firewall-insights>

136) Your company has sensitive data in Cloud Storage buckets. Data analysts have Identity Access Management (IAM) permissions to read the buckets. You want to prevent data analysts from retrieving the data in the buckets from outside the office network. What should you do?

- A. 1. Create a VPC Service Controls perimeter that includes the projects with the buckets. 2. Create an access level with the CIDR of the office network.
- B. 1. Create a firewall rule for all instances in the Virtual Private Cloud (VPC) network for source range.
2. Use the Classless Inter-domain Routing (CIDR) of the office network.
- C. 1. Create a Cloud Function to remove IAM permissions from the buckets, and another Cloud Function to add IAM permissions to the buckets. 2. Schedule the Cloud Functions with Cloud Scheduler to add permissions at the start of business and remove permissions at the end of business.
- D. 1. Create a Cloud VPN to the office network. 2. Configure Private Google Access for on-premises hosts.

Correct Answer: A

137) You have developed a non-critical update to your application that is running in a managed instance group, and have created a new instance template with the update that you want to release. To prevent any possible impact to the application, you don't want to update any running instances. You want any new instances that are created by the managed instance group to contain the new update. What should you do?

- A. Start a new rolling restart operation.
- B. Start a new rolling replace operation.
- C. Start a new rolling update. Select the Proactive update mode.
- D. Start a new rolling update. Select the Opportunistic update mode.

Correct Answer: D

138) Your company is designing its application landscape on Compute Engine. Whenever a zonal outage occurs, the application should be restored in another zone as quickly as possible with the latest application data. You need to design the solution to meet this requirement. What should you do?

- A. Create a snapshot schedule for the disk containing the application data. Whenever a zonal outage occurs, use the latest snapshot to restore the disk in the same zone.
- B. Configure the Compute Engine instances with an instance template for the application, and use a regional persistent disk for the application data. Whenever a zonal outage occurs, use the instance template to spin up the application in another zone in the same region. Use the regional persistent disk for the application data.**
- C. Create a snapshot schedule for the disk containing the application data. Whenever a zonal outage occurs, use the latest snapshot to restore the disk in another zone within the same region.
- D. Configure the Compute Engine instances with an instance template for the application, and use a regional persistent disk for the application data. Whenever a zonal outage occurs, use the instance template to spin up the application in another region. Use the regional persistent disk for the application data.

Correct Answer: B

139) Your company has just acquired another company, and you have been asked to integrate their existing Google Cloud environment into your company's data center. Upon investigation, you discover that some of the RFC 1918 IP ranges being used in the new company's Virtual Private Cloud (VPC) overlap with your data center IP space. What should you do to enable connectivity and make sure that there are no routing conflicts when connectivity is established?

- A. Create a Cloud VPN connection from the new VPC to the data center, create a Cloud Router, and apply new IP addresses so there is no overlapping IP space.
- B. Create a Cloud VPN connection from the new VPC to the data center, and create a Cloud NAT instance to perform NAT on the overlapping IP space.
- C. Create a Cloud VPN connection from the new VPC to the data center, create a Cloud Router, and apply a custom route advertisement to block the overlapping IP space.
- D. Create a Cloud VPN connection from the new VPC to the data center, and apply a firewall rule that blocks the overlapping IP space.

Correct Answer: A

140) You need to migrate Hadoop jobs for your company's Data Science team without modifying the underlying infrastructure. You want to minimize costs and infrastructure management effort. What should you do?

- A. Create a Dataproc cluster using standard worker instances.
- B. Create a Dataproc cluster using preemptible worker instances.
- C. Manually deploy a Hadoop cluster on Compute Engine using standard instances.
- D. Manually deploy a Hadoop cluster on Compute Engine using preemptible instances.

Correct Answer: A

Reference:

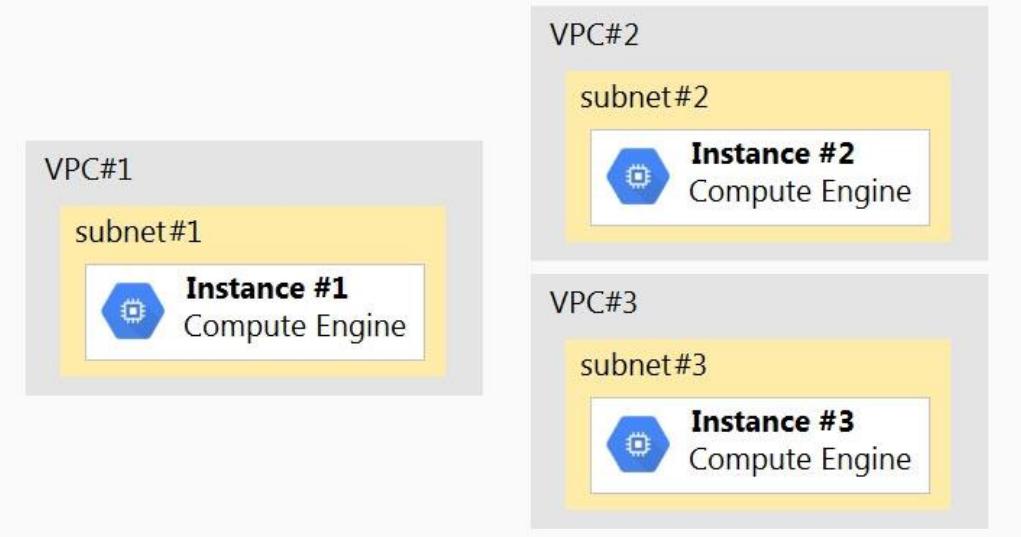
<https://cloud.google.com/architecture/hadoop/hadoop-gcp-migration-jobs>

141) Your company has a project in Google Cloud with three Virtual Private Clouds (VPCs). There is a Compute Engine instance on each VPC. Network subnets do not overlap and must remain separated. The network configuration is shown below.



Instance #1 is an exception and must communicate directly with both Instance #2 and Instance #3 via internal IPs. How should you accomplish this?

- A. Create a cloud router to advertise subnet #2 and subnet #3 to subnet #1.
- B. Add two additional NICs to Instance #1 with the following configuration: `NIC1 → VPC: VPC #2 → SUBNETWORK: subnet #2` `NIC2 → VPC: VPC #3 → SUBNETWORK: subnet #3` Update firewall rules to enable traffic between instances.
- C. Create two VPN tunnels via CloudVPN: 1 between VPC #1 and VPC #2. 1 between VPC #2 and VPC #3. Update firewall rules to enable traffic between the instances.
- D. Peer all three VPCs: `Peer VPC #1 with VPC #2.` `Peer VPC #2 with VPC #3.` Update firewall rules to enable traffic between the instances.



Correct Answer: B

142) You need to deploy an application on Google Cloud that must run on a Debian Linux environment. The application requires extensive configuration in order to operate correctly. You want to ensure that you can install Debian distribution updates with minimal manual intervention whenever they become available. What should you do?

- A. Create a Compute Engine instance template using the most recent Debian image. Create an instance from this template, and install and configure the application as part of the startup script. Repeat this process whenever a new Google-managed Debian image becomes available.
- B. Create a Debian-based Compute Engine instance, install and configure the application, and use OS patch management to install available updates.**
- C. Create an instance with the latest available Debian image. Connect to the instance via SSH, and install and configure the application on the instance. Repeat this process whenever a new Google-managed Debian image becomes available.
- D. Create a Docker container with Debian as the base image. Install and configure the application as part of the Docker image creation process. Host the container on Google Kubernetes Engine and restart the container whenever a new update is available.

Correct Answer: B

Reference:

<https://cloud.google.com/compute/docs/os-patch-management>

143) You need to deploy a stateful workload on Google Cloud. The workload can scale horizontally, but each instance needs to read and write to the same POSIX filesystem. At high load, the stateful workload needs to support up to 100 MB/s of writes. What should you do?

- A. Use a persistent disk for each instance.
- B. Use a regional persistent disk for each instance.
- C. Create a Cloud Filestore instance and mount it in each instance.**
- D. Create a Cloud Storage bucket and mount it in each instance using gcsfuse.

Correct Answer: C

<https://cloud.google.com/storage/docs/gcs-fuse#notes>

144) Your company has an application deployed on Anthos clusters (formerly Anthos GKE) that is running multiple microservices. The cluster has both Anthos Service Mesh and Anthos Config Management configured. End users inform you that the application is responding very slowly. You want to identify the microservice that is causing the delay. What should you do?

- A. Use the Service Mesh visualization in the Cloud Console to inspect the telemetry between the microservices.
- B. Use Anthos Config Management to create a ClusterSelector selecting the relevant cluster. On the Google Cloud Console page for Google Kubernetes Engine, view the Workloads and filter on the cluster. Inspect the configurations of the filtered workloads.
- C. Use Anthos Config Management to create a namespaceSelector selecting the relevant cluster namespace. On the Google Cloud Console page for Google Kubernetes Engine, visit the workloads and filter on the namespace. Inspect the configurations of the filtered workloads.
- D. Reinstall istio using the default istio profile in order to collect request latency. Evaluate the telemetry between the microservices in the Cloud Console.

Correct Answer: A

145) You are working at a financial institution that stores mortgage loan approval documents on Cloud Storage. Any change to these approval documents must be uploaded as a separate approval file, so you want to ensure that these documents cannot be deleted or overwritten for the next 5 years. What should you do?

- A. Create a retention policy on the bucket for the duration of 5 years. Create a lock on the retention policy.
- B. Create the bucket with uniform bucket-level access, and grant a service account the role of Object Writer. Use the service account to upload new files.
- C. Use a customer-managed key for the encryption of the bucket. Rotate the key after 5 years.
- D. Create the bucket with fine-grained access control, and grant a service account the role of Object Writer. Use the service account to upload new files.

Correct Answer: A

Reference:

<https://cloud.google.com/storage/docs/using-bucket-lock>

146) Your team will start developing a new application using microservices architecture on Kubernetes Engine. As part of the development lifecycle, any code change that has been pushed to the remote develop branch on your GitHub repository should be built and tested automatically. When the build and test are successful, the relevant microservice will be deployed automatically in the development environment. You want to ensure that all code deployed in the development environment follows this process. What should you do?

- A. Have each developer install a pre-commit hook on their workstation that tests the code and builds the container when committing on the development branch. After a successful commit, have the developer deploy the newly built container image on the development cluster.
- B. Install a post-commit hook on the remote git repository that tests the code and builds the container when code is pushed to the development branch. After a successful commit, have the developer deploy the newly built container image on the development cluster.
- C. Create a Cloud Build trigger based on the development branch that tests the code, builds the container, and stores it in Container Registry. Create a deployment pipeline that watches for new images and deploys the new image on the development cluster. Ensure only the deployment tool has access to deploy new versions.**
- D. Create a Cloud Build trigger based on the development branch to build a new container image and store it in Container Registry. Rely on Vulnerability Scanning to ensure the code tests succeed. As the final step of the Cloud Build process, deploy the new container image on the development cluster. Ensure only Cloud Build has access to deploy new versions.

Correct Answer: C

147) Your operations team has asked you to help diagnose a performance issue in a production application that runs on Compute Engine. The application is dropping requests that reach it when under heavy load. The process list for affected instances shows a single application process that is consuming all available CPU, and autoscaling has reached the upper limit of instances. There is no abnormal load on any other related systems, including the database. You want to allow production traffic to be served again as quickly as possible. Which action should you recommend?

- A. Change the autoscaling metric to agent.googleapis.com/memory/percent_used.
- B. Restart the affected instances on a staggered schedule.
- C. SSH to each instance and restart the application process.
- D. Increase the maximum number of instances in the autoscaling group.**

Correct Answer: D

148) You are developing an application using different microservices that should remain internal to the cluster. You want to be able to configure each microservice with a specific number of replicas. You also want to be able to address a specific microservice from any other microservice in a uniform way, regardless of the number of replicas the microservice scales to. You need to implement this solution on Google Kubernetes Engine. What should you do?

- A. Deploy each microservice as a Deployment. Expose the Deployment in the cluster using a Service, and use the Service DNS name to address it from other microservices within the cluster.
- B. Deploy each microservice as a Deployment. Expose the Deployment in the cluster using an Ingress, and use the Ingress IP address to address the Deployment from other microservices within the cluster.
- C. Deploy each microservice as a Pod. Expose the Pod in the cluster using a Service, and use the Service DNS name to address the microservice from other microservices within the cluster.
- D. Deploy each microservice as a Pod. Expose the Pod in the cluster using an Ingress, and use the Ingress IP address name to address the Pod from other microservices within the cluster.

Correct Answer: A

149) Your company has a networking team and a development team. The development team runs applications on Compute Engine instances that contain sensitive data. The development team requires administrative permissions for Compute Engine. Your company requires all network resources to be managed by the networking team. The development team does not want the networking team to have access to the sensitive data on the instances. What should you do?

- A. 1. Create a project with a standalone VPC and assign the Network Admin role to the networking team.
2. Create a second project with a standalone VPC and assign the Compute Admin role to the development team. 3. Use Cloud VPN to join the two VPCs.
- B. 1. Create a project with a standalone Virtual Private Cloud (VPC), assign the Network Admin role to the networking team, and assign the Compute Admin role to the development team.
- C. 1. Create a project with a Shared VPC and assign the Network Admin role to the networking team. 2. Create a second project without a VPC, configure it as a Shared VPC service project, and assign the Compute Admin role to the development team.
- D. 1. Create a project with a standalone VPC and assign the Network Admin role to the networking team.
2. Create a second project with a standalone VPC and assign the Compute Admin role to the development team. 3. Use VPC Peering to join the two VPCs.

Correct Answer: C

150) Your company sends all Google Cloud logs to Cloud Logging. Your security team wants to monitor the logs. You want to ensure that the security team can react quickly if an anomaly such as an unwanted firewall change or server breach is detected. You want to follow Google-recommended practices. What should you do?

- A. Schedule a cron job with Cloud Scheduler. The scheduled job queries the logs every minute for the relevant events.
- B. Export logs to BigQuery, and trigger a query in BigQuery to process the log data for the relevant events.
- C. Export logs to a Pub/Sub topic, and trigger Cloud Function with the relevant log events.
- D. Export logs to a Cloud Storage bucket, and trigger Cloud Run with the relevant log events.

Correct Answer: C

151) You have deployed several instances on Compute Engine. As a security requirement, instances cannot have a public IP address. There is no VPN connection between Google Cloud and your office, and you need to connect via SSH into a specific machine without violating the security requirements. What should you do?

- A. Configure Cloud NAT on the subnet where the instance is hosted. Create an SSH connection to the Cloud NAT IP address to reach the instance.
- B. Add all instances to an unmanaged instance group. Configure TCP Proxy Load Balancing with the instance group as a backend. Connect to the instance using the TCP Proxy IP.
- C. Configure Identity-Aware Proxy (IAP) for the instance and ensure that you have the role of IAP-secured Tunnel User. Use the gcloud command line tool to ssh into the instance.**
- D. Create a bastion host in the network to SSH into the bastion host from your office location. From the bastion host, SSH into the desired instance.

Correct Answer: C

https://cloud.google.com/iap/docs/using-tcp-forwarding#tunneling_with_ssh

152) Your company is using Google Cloud. You have two folders under the Organization: Finance and Shopping. The members of the development team are in a Google Group. The development team group has been assigned the Project Owner role on the Organization. You want to prevent the development team from creating resources in projects in the Finance folder. What should you do?

- A. Assign the development team group the Project Viewer role on the Finance folder, and assign the development team group the Project Owner role on the Shopping folder.
- B. Assign the development team group only the Project Viewer role on the Finance folder.
- C. Assign the development team group the Project Owner role on the Shopping folder, and remove the development team group Project Owner role from the Organization.
- D. Assign the development team group only the Project Owner role on the Shopping folder.

Correct Answer: C

Reference:

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

Case Study 1)

Company Overview

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

Company Background

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

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

Solution Concept

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

Technical Requirements

Requirements for Game Backend Platform

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

Requirements for Game Analytics Platform

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

CEO Statement

Our last successful game did not scale well with our previous cloud provider, 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.

CTO Statement

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

CFO Statement

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

153) For this question, refer to the Mountkirk Games case study. Mountkirk Games wants you to design their new testing strategy. How should the test coverage differ from their existing backends on the other platforms?
(Case Study 1)

- A. Tests should scale well beyond the prior approaches.
- B. Unit tests are no longer required, only end-to-end tests.
- C. Tests should be applied after the release is in the production environment.
- D. Tests should include directly testing the Google Cloud Platform (GCP) infrastructure.

Answer(s): A

Explanation:

From Scenario:

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

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

154) For this question, refer to the Mountkirk Games case study. Mountkirk Games has deployed their new backend on Google Cloud Platform (GCP). You want to create a thorough testing process for new versions of the backend before they are released to the public. You want the testing environment to scale in an economical way. How should you design the process? (Case Study 1)

- A.Create a scalable environment in GCP for simulating production load.
- B.Use the existing infrastructure to test the GCP-based backend at scale.
- C.Build stress tests into each component of your application using resources internal to GCP to simulate load.
- D.Create a set of static environments in GCP to test different levels of load -- for example, high, medium, and low.

Answer(s): A

Explanation:

From scenario: Requirements for Game Backend Platform

Dynamically scale up or down based on game activity

Connect to a managed NoSQL database service

Run customize Linux distro

155) For this question, refer to the Mountkirk Games case study. Mountkirk Games wants to set up a continuous delivery pipeline. Their architecture includes many small services that they want to be able to update and roll back quickly. Mountkirk Games has the following requirements:

- Services are deployed redundantly across multiple regions in the US and Europe.
- Only frontend services are exposed on the public internet.
- They can provide a single frontend IP for their fleet of services.
- Deployment artifacts are immutable.

Which set of products should they use? (Case Study 1)

- A.Google Cloud Storage, Google Cloud Dataflow, Google Compute Engine
- B.Google Cloud Storage, Google App Engine, Google Network Load Balancer
- C.Google Kubernetes Registry, Google Container Engine, Google HTTP(S) Load Balancer**
- D.Google Cloud Functions, Google Cloud Pub/Sub, Google Cloud Deployment Manager

Answer(s): C

156) For this question, refer to the Mountkirk Games case study. Mountkirk Games' gaming servers are not automatically scaling properly. Last month, they rolled out a new feature, which suddenly became very popular. A record number of users are trying to use the service, but many of them are getting 503 errors and very slow response times. What should they investigate first? (Case Study 1)

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

Answer(s): B

Explanation:

503 is service unavailable error. If the database was online everyone would get the 503 error.

https://cloud.google.com/docs/quota#capping_usage

157) For this question, refer to the Mountkirk Games case study Mountkirk Games needs to create a repeatable and configurable mechanism for deploying isolated application environments. Developers and testers can access each other's environments and resources, but they cannot access staging or production resources. The staging environment needs access to some services from production. (Case Study 1)

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

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

Answer(s): D

158) For this question, refer to the Mountkirk Games case study. Mountkirk Games wants to set up a real-time analytics platform for their new game. The new platform must meet their technical requirements.

Which combination of Google technologies will meet all of their requirements? (Case Study 1)

- A.Container Engine, Cloud Pub/Sub, and Cloud SQL
- B.Cloud Dataflow, Cloud Storage, Cloud Pub/Sub, and BigQuery**
- C.Cloud SQL, Cloud Storage, Cloud Pub/Sub, and Cloud Dataflow
- D.Cloud Dataproc, Cloud Pub/Sub, Cloud SQL, and Cloud Dataflow
- E.Cloud Pub/Sub, Compute Engine, Cloud Storage, and Cloud Dataproc

Answer(s): B

Reference:

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

Case Study 2)

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.

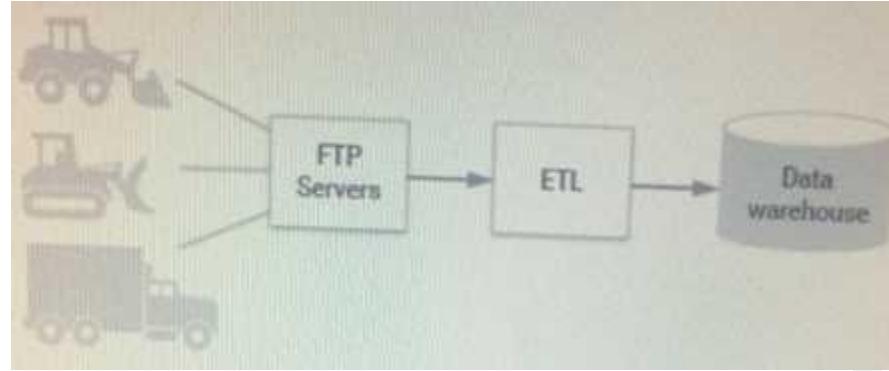
Company Background

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

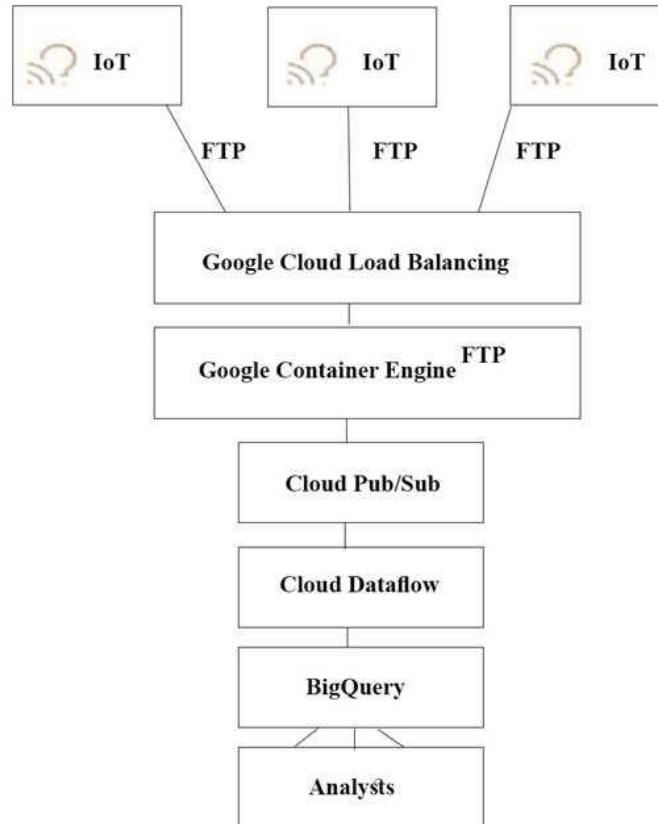
Our competitive advantage has always been in the manufacturing process with our ability to build better vehicles for lower cost than our competitors. However, new products with different approaches are constantly being developed, and I'm concerned that we lack the skills to undergo the next wave of transformations in our industry. 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.

159) For this question, refer to the TerramEarth case study. (Case Study 2)

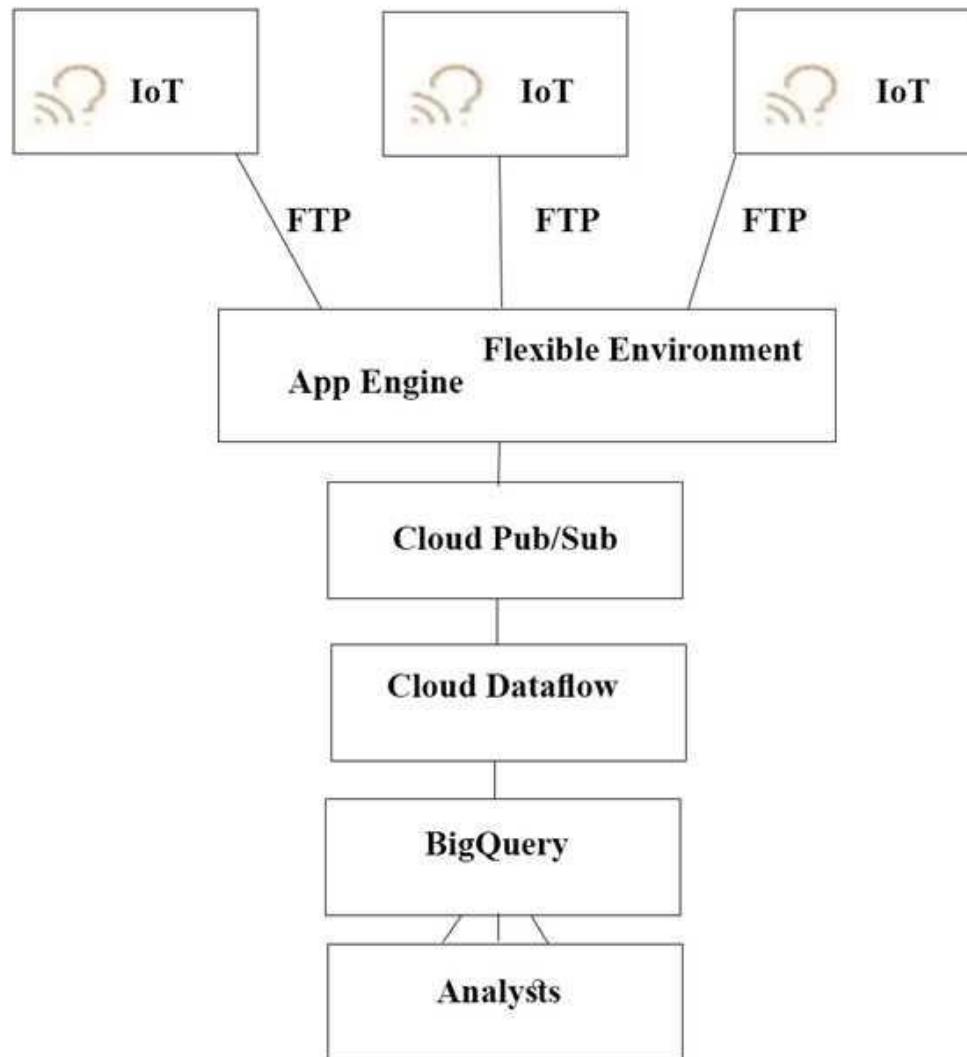
TerramEarth's CTO wants to use the raw data from connected vehicles to help identify approximately when a vehicle in the development team to focus their failure. You want to allow analysts to centrally query the vehicle data.

Which architecture should you recommend?

A)



B)



Answer(s): A

Explanation:

<https://cloud.google.com/solutions/iot/>

<https://cloud.google.com/solutions/designing-connected-vehicle-platform>

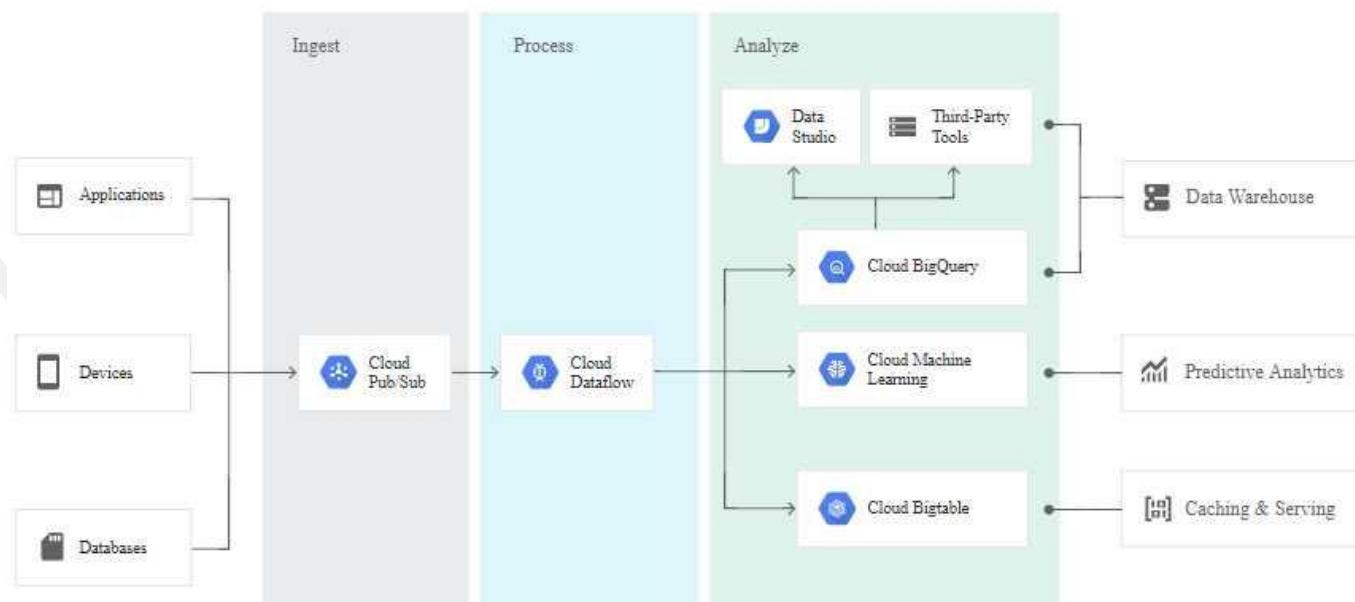
https://cloud.google.com/solutions/designing-connected-vehicle-platform#data_ingestion <http://www.eweek.com/big-data-and-analytics/google-touts-value-of-cloud-iot-core-for-analyzing-connected-car-data>

<https://cloud.google.com/solutions/iot/>

The push endpoint can be a load balancer.

A container cluster can be used.

Cloud Pub/Sub for Stream Analytics



160) For this question, refer to the TerramEarth case study. (Case Study 2)

The TerramEarth development team wants to create an API to meet the company's business requirements. You want the development team to focus their development effort on business value versus creating a custom framework. Which method should they use?

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

Answer(s): A

Reference:

<https://cloud.google.com/certification/guides/cloud-architect/casestudy-terramearth>

161) For this question, refer to the TerramEarth case study (Case Study 2)

Your development team has created a structured API to retrieve vehicle data. They want to allow third parties to develop tools for dealerships that use this vehicle event data.

You want to support delegated authorization against this data.

What should you do?

- A. Build or leverage an OAuth-compatible access control system.
- B. Build SAML 2.0 SSO compatibility into your authentication system.
- C. Restrict data access based on the source IP address of the partner systems.
- D. Create secondary credentials for each dealer that can be given to the trusted third party.

Answer(s): A

Explanation:

<https://cloud.google.com/appengine/docs/flexible/go/authorizing-apps> https://cloud.google.com/docs/enterprise/best-practices-for-enterprise-organizations#delegate_application_authorization_with_oauth2

Delegate application authorization with OAuth2

Cloud Platform APIs support OAuth 2.0, and scopes provide granular authorization over the methods that are supported.

Cloud Platform supports both service-account and user-account OAuth, also called three-legged OAuth.

162) For this question, refer to the TerramEarth case study. (Case Study 2)

TerramEarth plans to connect all 20 million vehicles in the field to the cloud. This increases the volume to 20 million 600 byte records a second for 40 TB an hour. How should you design the data ingestion?

- A. Vehicles write data directly to GCS.
- B. Vehicles write data directly to Google Cloud Pub/Sub.**
- C. Vehicles stream data directly to Google BigQuery.
- D. Vehicles continue to write data using the existing system (FTP).

Answer(s): B

Explanation:

<https://cloud.google.com/solutions/data-lifecycle-cloud-platform> <https://cloud.google.com/solutions/designing-connected-vehicle-platform>

163) For this question, refer to the TerramEarth case study (Case Study 2)

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?

- A.Migrate from CSV to binary format, migrate from FTP to SFTP transport, and develop machine learning analysis of metrics.
- B.Migrate from FTP to streaming transport, migrate from CSV to binary format, and develop machine learning analysis of metrics.
- C.Increase fleet cellular connectivity to 80%, migrate from FTP to streaming transport, and develop machine learning analysis of metrics.**
- D.Migrate from FTP to SFTP transport, develop machine learning analysis of metrics, and increase dealer local inventory by a fixed factor.

Answer(s): C

Explanation:

The Avro binary format is the preferred format for loading compressed data. Avro data is faster to load because the data can be read in parallel, even when the data blocks are compressed. Cloud Storage supports streaming transfers with the gsutil tool or boto library, based on HTTP chunked transfer encoding. Streaming data lets you stream data to and from your Cloud Storage account as soon as it becomes available without requiring that the data be first saved to a separate file. Streaming transfers are useful if you have a process that generates data and you do not want to buffer it locally before uploading it, or if you want to send the result from a computational pipeline directly into Cloud Storage.

Reference:

<https://cloud.google.com/storage/docs/streaming> <https://cloud.google.com/bigquery/docs/loading-data>

164) For this question refer to the TerramEarth case study. (Case Study 2)

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

- A.Opex/capex allocation, LAN changes, capacity planning
- B.Capacity planning, TCO calculations, opex/capex allocation**
- C.Capacity planning, utilization measurement, data center expansion
- D.Data Center expansion, TCO calculations, utilization measurement

Answer(s): B

Explanation:

Capacity planning, TCO calculations, opex/capex allocation From the case study, it can conclude that Management (CXO) all concern rapid provision of resources (infrastructure) for growing as well as cost management, such as Cost optimization in Infrastructure, trade up front capital expenditures (Capex) for ongoing operating expenditures (Opex), and Total cost of ownership (TCO)

165) 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? (Case Study 2)

- A. Use one Google Container Engine cluster of FTP servers. Save the data to a Multi-Regional bucket.
Run the ETL process using data in the bucket.
- B. Use multiple Google Container Engine clusters running FTP servers located in different regions.
Save the data to Multi-Regional buckets in us, eu, and asia. Run the ETL process using the data in the bucket.
- C. 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.
- D. Directly transfer the files to a different Google Cloud Regional Storage bucket location in us, eu, and asia using Google APIs over HTTP(S). Run the ETL process to retrieve the data from each Regional bucket.

Answer(s): D

Explanation:

<https://cloud.google.com/storage/docs/locations>

166) For this question, refer to the TerramEarth case study. (Case Study 2)

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?

- A.Move all the data into 1 zone, then launch a Cloud Dataproc cluster to run the job.
- B.Move all the data into 1 region, then launch a Google Cloud Dataproc cluster to run the job.
- C.Launch a cluster in each region to preprocess and compress the raw data, then move the data into a multi region bucket and use a Dataproc cluster to finish the job.
- D.Launch a cluster in each region to preprocess and compress the raw data, then move the data into a region bucket and use a Cloud Dataproc cluster to finish the jo**

Answer(s): D

Explanation:

Storageguarantees 2 replicates which are geo diverse (100 miles apart) which can get better remote latency and availability. More importantly, is that multiregional heavily leverages Edge caching and CDNs to provide the content to the end users. All this redundancy and caching means that Multiregional comes with overhead to sync and ensure consistency between geo-diverse areas. As such, it's much better for write-once-read-many scenarios. This means frequently accessed (e.g. "hot" objects) around the world, such as website content, streaming videos, gaming or mobile applications.

Reference:

<https://medium.com/google-cloud/google-cloud-storage-what-bucket-class-for-the-best-performance-5c847ac8f9f2>

167) For this question, refer to the TerramEarth case study. (Case Study 2)

TerramEarth has equipped unconnected trucks with servers and sensors to collect 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?

- A. Have the vehicle's computer compress the data in hourly snapshots, and store it in a Google Cloud storage (GCS) Nearline bucket.
- B. Push the telemetry data in Real-time to a streaming dataflow job that compresses the data, and store it in Google BigQuery.
- C. Push the telemetry data in real-time to a streaming dataflow job that compresses the data, and store it in Cloud Bigtable.
- D. Have the vehicle's computer compress the data in hourly snapshots, and store it in a GCS Coldline bucket.**

Answer(s): D

Explanation:

Coldline Storage is the best choice for data that you plan to access at most once a year, due to its slightly lower availability, 90-day minimum storage duration, costs for data access, and higher per-operation costs. For example:

Cold Data Storage - Infrequently accessed data, such as data stored for legal or regulatory reasons, can be stored at low cost as Coldline Storage, and be available when you need it. Disaster recovery - In the event of a disaster recovery event, recovery time is key. Cloud Storage provides low latency access to data stored as Coldline Storage.

Reference:

<https://cloud.google.com/storage/docs/storage-classes>

168) For this question refer to the TerramEarth case study (Case Study 2)
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?

- A.Have your engineers inspect the data for patterns, and then create an algorithm with rules that make operational adjustments automatically.
- B.Capture all operating data, train machine learning models that identify ideal operations, and run locally to make operational adjustments automatically.**
- C.Implement a Google Cloud Dataflow streaming job with a sliding window, and use Google Cloud Messaging (GCM) to make operational adjustments automatically.
- 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.

Answer(s): B

169) Your agricultural division is experimenting with fully autonomous vehicles. You want your architecture to promote strong security during vehicle operation.

Which two architecture should you consider?

Choose 2 answers: (Case Study 2)

- A.Treat every micro service call between modules on the vehicle as untrusted.
- 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.
- 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(s): A,C

Case Study 3)

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

20 TB

Complex table structure

Well maintained, clean data

Strong backup strategy

- PostgreSQL database stores user credentials

Single-homed in US West

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:

Single dual-core CPU

24 GB of RAM

Twin 250 GB 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 availability 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 policies.

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.

170) 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? (Case Study 3)

- A.Create two G Suite accounts to manage users: one for development/test/staging and one for production. Each account should contain one project for every application.
- B.Create two G Suite accounts to manage users: one with a single project for all development applications and one with a single project for all production applications.
- C.Create a single G Suite account to manage users with each stage of each application in its own project.
- 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.

Answer(s): D

Explanation:

Note: The principle of least privilege and separation of duties are concepts that, although semantically different, are intrinsically related from the standpoint of security. The intent behind both is to prevent people from having higher privilege levels than they actually need

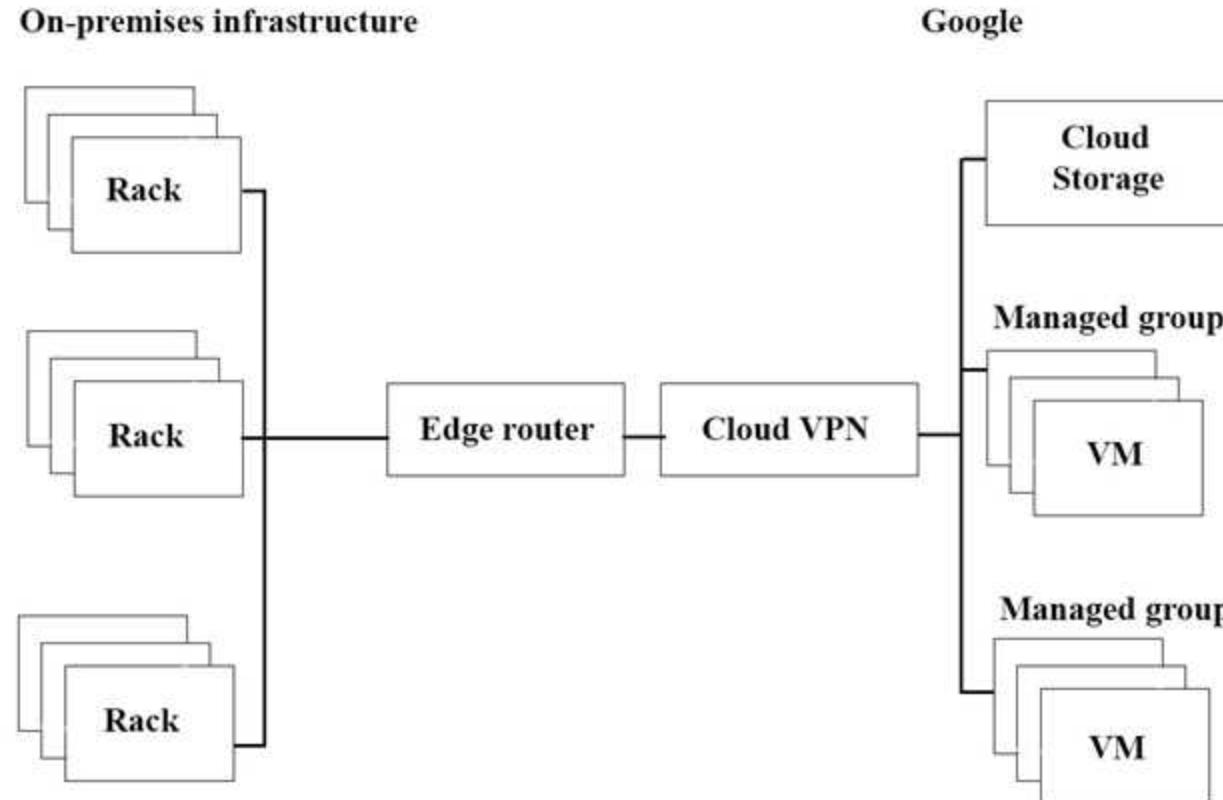
Principle of Least Privilege: Users should only have the least amount of privileges required to perform their job and no more. This reduces authorization exploitation by limiting access to resources such as targets, jobs, or monitoring templates for which they are not authorized.

Separation of Duties: Beyond limiting user privilege level, you also limit user duties, or the specific jobs they can perform. No user should be given responsibility for more than one related function. This limits the ability of a user to perform a malicious action and then cover up that action.

171) 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. (Case Study 3)

What are three potential bottlenecks? (Choose 3 answers.)



- A.A single VPN tunnel, which limits throughput
- B.A tier of Google Cloud Storage that is not suited for this task
- C.A copy command that is not suited to operate over long distances
- D.Fewer virtual machines (VMs) in GCP than on-premises machines
- E.A separate storage layer outside the VMs, which is not suited for this task
- F.Complicated internet connectivity between the on-premises infrastructure and GCP

Answer(s): A,D,F

172) For this question, refer to the JencoMart case study

(Case Study 3)

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

- A.Delete the virtual machine (VM) and disks and create a new one.
- B.Delete the instance, attach the disk to a new VM, and investigate.
- C.Take a snapshot of the disk and connect to a new machine to investigate.
- D.Check inbound firewall rules for the network the machine is connected to.
- E.Connect the machine to another network with very simple firewall rules and investigate.
- F.Print the Serial Console output for the instance for troubleshooting, activate the interactive console, and investigate.

Answer(s): C,D,F

173) For this question, refer to the JencoMart case study. (Case Study 3)

JencoMart wants to move their User Profiles database to Google Cloud Platform.
Which Google Database should they use?

- A.Cloud Spanner
- B.Google BigQuery
- C.Google Cloud SQL
- D.Google Cloud Datastore

Answer(s): D

Explanation:

<https://cloud.google.com/datastore/docs/concepts/overview>

Common workloads for Google Cloud Datastore:

User profiles

Product catalogs

Game state

174) 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?

- 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(s): C

Migrating data to Google Cloud Platform

Let's say that you have some data processing that happens on another cloud provider and you want to transfer the processed data to Google Cloud Platform. You can use a service account from the virtual machines on the external cloud to push the data to Google Cloud Platform. To do this, you must create and download a service account key when you create the service account and then use that key from the external process to call the Cloud Platform APIs.

Reference:

https://cloud.google.com/iam/docs/understanding-service-accounts#migrating_data_to_google_cloud_platform

175) For this question, refer to the JencoMart case study. (Case Study 3)

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
- E.The number of character sets present in the database

Answer(s): D

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.

176) For this question, refer to the Dress4Win case study. (Case Study 4)

At Dress4Win, an operations engineer wants to create a low-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?

- A.Create a cron script using gsutil to copy the files to a Coldline Storage bucket.
- 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(s): 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

<https://cloud.google.com/storage-transfer/docs/overview>

177) For this question, refer to the Dress4Win case study. (Case Study 4)

Dress4Win has asked you to recommend machine types they should deploy their application servers to. How should you proceed?

- 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.

Answer(s): C

178) For this question, refer to the Dress4Win case study. (Case Study 4)

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?

- 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.
- 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(s): B

179) For this question, refer to the Dress4Win case study. (Case Study 4)

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?

- A. Install the Stackdriver agent on all of the legacy web servers.
- B. In the Cloud Platform Console download the list of the uptime servers' IP addresses and create an inbound firewall rule
- 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(s): B

180) For this question, refer to the Dress4Win case study. (Case Study 4)

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.
- B.Google Cloud Storage Nearline to store the data, and gsutil to access the data.
- C.Google Bigtable 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(s): A

Reference:

<https://cloud.google.com/storage/docs/storage-classes>

181) For this question, refer to the Dress4Win case study. (Case Study 4)

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 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.
- 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(s): B

182) For this question, refer to the Dress4Win case study. (Case Study 4)

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?

- 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.
- 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(s): A

183) For this question, refer to the Dress4Win case study. (Case Study 4)

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?

- 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.
- 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(s): A

184) For this question, refer to the Dress4Win case study. (Case Study 4)

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?

- A.Identify self-contained applications with external dependencies as a first move to the cloud.
- B.Identify enterprise applications with internal dependencies and recommend these as a first move to the cloud.
- C.Suggest moving their in-house databases to the cloud and continue serving requests to on-premise applications.
- D.Recommend moving their message queuing servers to the cloud and continue handling requests to on-premise applications.

Answer(s): A

Explanation:

<https://cloud.google.com/blog/products/gcp/the-five-phases-of-migrating-to-google-cloud-platform>

185) For this question, refer to the Dress4Win case study. (Case Study 4)

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?

- A.Logging, Alerts, Insights, Debug
- B.Monitoring, Trace, Debug, Logging
- C.Monitoring, Logging, Alerts, Error Reporting
- D.Monitoring, Logging, Debug, Error Report

Answer(s): D

186) Dress4win has end to end tests covering 100% of their endpoints. They want to ensure that the move of cloud does not introduce any new bugs. (Case Study 4)

Which additional testing methods should the developers employ to prevent an outage?

- A.They should run the end to end tests in the cloud staging environment to determine if the code is working as intended.
- B.They should enable google stack driver debugger on the application code to show errors in the code
- C.They should add additional unit tests and production scale load tests on their cloud staging environment.
- D.They should add canary tests so developers can measure how much of an impact the new release causes to latency

Answer(s): B

187) The current Dress4win system architecture has high latency to some customers because it is located in one data center. (Case Study 4)

As of a future evaluation and optimizing for performance in the cloud, Dressss4win wants to distribute it's system architecture to multiple locations when Google cloud platform.

Which approach should they use?

- A.Use regional managed instance groups and a global load balancer to increase performance because the regional managed instance group can grow instances in each region separately based on traffic.
- B.Use a global load balancer with a set of virtual machines that forward the requests to a closer group of virtual machines managed by your operations team.
- C.Use regional managed instance groups and a global load balancer to increase reliability by providing automatic failover between zones in different regions.
- D.Use a global load balancer with a set of virtual machines that forward the requests to a closer group of virtual machines as part of a separate managed instance groups.

Answer(s): A

(Case Study 5) 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 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.

188) 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? (Case Study 5)

- A.Migrate the web application layer to App Engine, and MySQL to Cloud Datastore, and NAS to Cloud Storage. Deploy RabbitMQ, and deploy Hadoop servers using Deployment Manager.
- B.Migrate RabbitMQ to Cloud Pub/Sub, Hadoop to BigQuery, and NAS to Compute Engine with Persistent Disk storage. Deploy Tomcat, and deploy Nginx using Deployment Manager.
- C.Implement managed instance groups for Tomcat and Nginx. Migrate MySQL to Cloud SQL, RabbitMQ to Cloud Pub/Sub, Hadoop to Cloud Dataproc, and NAS to Compute Engine with Persistent Disk storage.
- 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.

Answer(s): D

189) 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?
(Case Study 5)

- A.Deploy Nginx and Tomcat using Cloud Deployment Manager to Compute Engine. Deploy a Cloud SQL server to replace MySQL. Deploy Jenkins using Cloud Deployment Manager.
- B.Deploy Nginx and Tomcat using Cloud Launcher. Deploy a MySQL server using Cloud Launcher. Deploy Jenkins to Compute Engine using Cloud Deployment Manager scripts.
- 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.
- D.Migrate Nginx and Tomcat to App Engine. Deploy a MySQL server using Cloud Launcher. Deploy Jenkins to Compute Engine using Cloud Launcher.

Answer(s): A

190) 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? (Case Study 5)

- A.Web applications deployed using App Engine standard environment
- B.RabbitMQ deployed using an unmanaged instance group
- C.Hadoop/Spark deployed using Cloud Dataproc Regional in High Availability mode
- D.Jenkins, monitoring, bastion hosts, security scanners services deployed on custom machine types

Answer(s): C

191) 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? (Case Study 5)

- A.Use Stackdriver Trace to create a trace list analysis.
- B.Use Stackdriver Monitoring to create a dashboard on the project's activity.
- C.Enable Cloud Identity-Aware Proxy in all projects, and add the group of Administrators as a member.
- D.Use the Activity page in the GCP Console and Stackdriver Logging to provide the required insight.

Answer(s): A

Explanation:

<https://cloud.google.com/logging/docs/audit/>

192) 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. (Case Study 5)

Considering Dress4Win's business and technical requirements, what should you do?

- A. Assign custom IAM roles to the Google Groups you created in order to enforce security requirements.
Encrypt data with a customer-supplied encryption key when storing files in Cloud Storage.
- B. Assign custom IAM roles to the Google Groups you created in order to enforce security requirements.
Enable default storage encryption before storing files in Cloud Storage.
- C. Assign predefined IAM roles to the Google Groups you created in order to enforce security requirements.
Utilize Google's default encryption at rest when storing files in Cloud Storage.
- D. Assign predefined IAM roles to the Google Groups you created in order to enforce security requirements. Ensure that the default Cloud KMS key is set before storing files in Cloud Storage.

Answer(s): D

Explanation:

<https://cloud.google.com/iam/docs/understanding-service-accounts>

193) 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. (Case Study 5)
What change in the on-premises architecture should you make?

- A.Replace RabbitMQ with Google Pub/Sub.
- B.Downgrade MySQL to v5.7, which is supported by Cloud SQL for MySQL.
- C.Resize compute resources to match predefined Compute Engine machine types.
- D.Containerize the micro services and host them in Google Kubernetes Engine.

Answer(s): C

Case Study 6

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.

194) 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? (Case Study 6)

- A.Create a BigQuery table for the European data, and set the table retention period to 36 months.
For Cloud Storage, use gsutil to enable lifecycle management using a DELETE action with an Age condition of 36 months.
- B.Create a BigQuery table for the European data, and set the table retention period to 36 months.
For Cloud Storage, use gsutil to create a SetStorageClass to NONE action when with an Age condition of 36 months.
- 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.**
- D.Create a BigQuery time-partitioned table for the European data, and set the partition period to 36 months. For Cloud Storage, use gsutil to create a SetStorageClass to NONE action with an Age condition of 36 months.

Answer(s): C

Explanation:

<https://cloud.google.com/bigquery/docs/managing-partitioned-tables#partition-expiration>

<https://cloud.google.com/storage/docs/lifecycle>

195) 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? (Case Study 6)

- 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 Class: "Coldline", and Action: "Delete".
- B.Create a Cloud Storage lifecycle rule with Age: "30", Storage Class: "Coldline", and Action: "Set to Nearline", and create a second GCS life-cycle rule with Age: "91", Storage Class: "Coldline", and Action: "Set to Nearline".
- C.Create a Cloud Storage lifecycle rule with Age: "90", Storage Class: "Standard", and Action: "Set to Nearline", and create a second GCS life-cycle rule with Age: "91", Storage Class: "Nearline", and Action: "Set to Coldline".
- D.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 Class: "Nearline", and Action: "Delete".

Answer(s): A

196) 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? (Case Study 6)

- A.Replace the existing data warehouse with BigQuery. Use table partitioning.
- B.Replace the existing data warehouse with a Compute Engine instance with 96 CPUs.
- C.Replace the existing data warehouse with BigQuery. Use federated data sources.**
- D.Replace the existing data warehouse with a Compute Engine instance with 96 CPUs. Add an additional Compute Engine pre-emptible instance with 32 CPUs.

Answer(s): C

Explanation:

https://cloud.google.com/solutions/bigquery-data-warehouse#external_sources

<https://cloud.google.com/solutions/bigquery-data-warehouse>

197) For this question, refer to the TerraEarth 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. (Case Study 6)

What should you do?

- 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.

Answer(s): A

198) For this question, refer to the TerramEarth case study. Considering the technical requirements, how should you reduce the unplanned vehicle downtime in GCP? (Case Study 6)

- 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.
- 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 partitioned Hive tables. Use Pig scripts to analyze data.

Answer(s): A

199) 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. (Case Study 6)
Considering the technical requirements, which components should you use for the ingestion of the data?

- A. Google Kubernetes Engine with an SSL Ingress
- B. Cloud IoT Core with public/private key pairs
- C. Compute Engine with project-wide SSH keys
- D. Compute Engine with specific SSH keys

Answer(s): A

Explanation:

<https://cloud.google.com/solutions/iot-overview> <https://cloud.google.com/iot/quotas>

200) TerramEarth has about 1 petabyte (PB) of vehicle testing data in a private data center. You want to move the data to Cloud Storage for your machine learning team. Currently, a 1-Gbps interconnect link is available for you. The machine learning team wants to start using the data in a month.
What should you do? (Case Study 6)

- A. Request Transfer Appliances from Google Cloud, export the data to appliances, and return the appliances to Google Cloud.
- B. Configure the Storage Transfer service from Google Cloud to send the data from your data center to Cloud Storage
- C. Make sure there are no other users consuming the 1 Gbps link, and use multi-thread transfer to upload the data to Cloud Storage.
- D. Export files to an encrypted USB device, send the device to Google Cloud, and request an import of the data to Cloud Storage

Answer(s): A

201) Your company wants you to build a highly reliable web application with a few public APIs as the backend. You don't expect a lot of user traffic, but traffic could spike occasionally. You want to leverage Cloud Load Balancing, and the solution must be cost-effective for users. What should you do?

- A. Store static content such as HTML and images in Cloud CDN. Host the APIs on App Engine and store the user data in Cloud SQL.
- B. Store static content such as HTML and images in a Cloud Storage bucket. Host the APIs on a zonal Google Kubernetes Engine cluster with worker nodes in multiple zones, and save the user data in Cloud Spanner.
- C. Store static content such as HTML and images in Cloud CDN. Use Cloud Run to host the APIs and save the user data in Cloud SQL.
- D. Store static content such as HTML and images in a Cloud Storage bucket. Use Cloud Functions to host the APIs and save the user data in Firestore.**

Correct Answer: D

202) You are developing your microservices application on Google Kubernetes Engine. During testing, you want to validate the behavior of your application in case a specific microservice should suddenly crash. What should you do?

- A. Add a taint to one of the nodes of the Kubernetes cluster. For the specific microservice, configure a pod anti-affinity label that has the name of the tainted node as a value.
- B. Use Istio's fault injection on the particular microservice whose faulty behavior you want to simulate.**
- C. Destroy one of the nodes of the Kubernetes cluster to observe the behavior.
- D. Configure Istio's traffic management features to steer the traffic away from a crashing microservice.

Correct Answer: B

203) You are implementing the infrastructure for a web service on Google Cloud. The web service needs to receive and store the data from 500,000 requests per second. The data will be queried later in real time, based on exact matches of a known set of attributes. There will be periods where the web service will not receive any requests. The business wants to keep costs low. Which web service platform and database should you use for the application?

- A. Cloud Run and BigQuery
- B. Cloud Run and Cloud Bigtable**
- C. A Compute Engine autoscaling managed instance group and BigQuery
- D. A Compute Engine autoscaling managed instance group and Cloud Bigtable

Correct Answer: B

204) You have an application that runs in Google Kubernetes Engine (GKE). Over the last 2 weeks, customers have reported that a specific part of the application returns errors very frequently. You currently have no logging or monitoring solution enabled on your GKE cluster. You want to diagnose the problem, but you have not been able to replicate the issue. You want to cause minimal disruption to the application. What should you do?

- A. 1. Update your GKE cluster to use Cloud Operations for GKE. 2. Use the GKE Monitoring dashboard to investigate logs from affected Pods.
- B. 1. Create a new GKE cluster with Cloud Operations for GKE enabled. 2. Migrate the affected Pods to the new cluster, and redirect traffic for those Pods to the new cluster. 3. Use the GKE Monitoring dashboard to investigate logs from affected Pods.
- C. 1. Update your GKE cluster to use Cloud Operations for GKE, and deploy Prometheus. 2. Set an alert to trigger whenever the application returns an error.
- D. 1. Create a new GKE cluster with Cloud Operations for GKE enabled, and deploy Prometheus. 2. Migrate the affected Pods to the new cluster, and redirect traffic for those Pods to the new cluster. 3. Set an alert to trigger whenever the application returns an error.

Correct Answer: A

205) You are updating a CSV file stored in Cloud Storage and want to append the data to an existing BigQuery table with same schema using

```
bq load --location=US load --source_format=CSV \
--autodetect db.scores gs://sc-db-009934/scores.csv
```

After executing the bq load command, the job failed with the following error

```
Could not parse 'NULL' as int for field score_value
CSV table encountered too many errors, giving up. Rows 999; errors:1.
```

How should you solve this issue to append the CSV data to the existing BigQuery table?

- A. bq load default setup cannot load more than 1000 rows at once, add the option `--limit_rows=false` to the command above and re execute it.
- B. bq load is failing most likely because `score_value` field is expected to be int but has NULL value in the CSV file. add option `--bad_records=true` to ignore the nulls `--replace=false` for appending only.
- C. bq load is failing most likely because `score_value` field is expected to be int but has NULL value in the CSV file. add option `--null_marker` to mark nulls and `--replace` for appending only.
- D. bq load is failing most likely because `score_value` field is expected to be int but has NULL value in the CSV file. add option `--null_marker` to mark nulls and `--replace=false` for appending only.

Correct Answer: D

<https://cloud.google.com/bigquery/docs/bq-command-line-tool>

206) An analytics consulting firm is considering using Microsoft Active Directory in Google Cloud to centrally manage their users and applications. It is important that the server is highly available and fault tolerant as the employees use it globally to connect to different applications.

As a GCP cloud architect what solution will you recommend to the firm?

- A. Create a custom mode VPC network with 2 subnets spanning 2 zones. Create Windows Server virtual instances and enable Active Directory Domain Services. Configure a new domain with Active Directory. Join the new Windows Server instances to the new domain and configure firewall rules to allow traffic to the virtual machines.
- B. Create a VPC with one subnet spanning 2 zones. Create Windows Server virtual instances and enable Active Directory Domain Services. Configure a new domain with Active Directory. Join the new Windows Server instances to the new domain and configure firewall rules to allow traffic to the virtual machines.
- C. Create a custom mode VPC network with 2 subnets spanning 2 zones. Create Windows server virtual instances and enable Active Directory Domain Services. Create a load balancer with auto scaling group policy to run two virtual machines.
- D. Create a VPC with one subnet spanning 2 zones. Create Windows server virtual instances and enable Active Directory Domain Services. Create a load balancer with auto scaling group policy to run two virtual machines.

Correct Answer: A

To create a highly available and fault tolerant architecture, the servers must be deployed in 2 zones. Two server instances should be created in each zone / subnet and should be configured to allow traffic between them. Two subnets should be created - one in each zone. For this reason, choices having less than two subnets or not spanning two zones are incorrect.

Load balancer and auto scaling group are not the right choice to deploy a highly available Active Directory. For this reason, the AD option using load balancers is incorrect.

207) You are working in an Infrastructure team where you are using Google Cloud Platform as your Cloud Provider. Your boss has asked you to configure a compute engine to host an application that needs access to a recently created Storage Bucket. Your boss tells you to use a new Service Account to do this.

How would you achieve the given requirement in the most reliable way?

- A. Create a new Service Account with a role as Storage Admin

While configuring Compute Engine, Choose the newly created Service Account and Set the scope to Storage API
Set of path of service account keys in your application

- B. Create a Service Account with role as Storage Admin

While configuring Compute Engine, Choose the newly created Service Account and Set the scope to Storage API
No need to Set the path of service account keys in your application

- C. Create a Service Account with role as Storage Admin

While configuring Compute Engine, Choose the newly created Service Account.
Set of path of service account keys in your application

- D. Create a Service Account with role as Storage Admin

While configuring Compute Engine, Choose the newly created Service Account.
No need to Set the path of service account keys in your application

Correct Answer: D

You have chosen the required privileges for the Service account, and if your application is running in the compute engine, you are not required to specify credentials explicitly.

208) A hedge fund firm is using google cloud infrastructure for their compute and storage requirements. In order to comply with regulations, the company should store all the files available for audit by the authorities. All the files up to past 3 years should be available for audit before deletion.

The employees are aware of the regulatory requirements, but sometimes they might delete the files accidentally. The company wants to avoid such accidents as they attract fines from the authorities.

How should they manage the storage to be compliant to the regulation?

- A. Use cloud storage for storing data. Enable multi region buckets and back-up data to a nearline storage. Set object lifecycle policy to delete objects that are more than 3 years old.
- B. Use cloud storage for storing data. Add retention policy to the buckets with retention period of 3 years.**
- C. Use cloud storage for storing data. Enable multi region buckets and back-up data to a coldline storage. Set object lifecycle policy to delete objects that are more than 3 years old.
- D. Use cloud storage for storing data. Enable object versioning for the buckets. Use object lifecycle policy to delete objects that are more than 3 years old.

Correct Answer: B

Retention policies can provide immutable storage on Cloud Storage. In conjunction with Detailed audit logging mode, which logs Cloud Storage request and response details, Bucket Lock can help with regulatory and compliance requirements, such as those associated with FINRA, SEC, and CFTC.

The hedge firm can add a retention policy that prohibits anyone from deleting an object for 3 years and comply with the regulation.

209) TerramEarth has a legacy web application that you cannot migrate to cloud. However, you still want to build a cloud-native way to monitor the application. If the application goes down, you want the URL to point to a "Site is unavailable" page as soon as possible. You also want your Ops team to receive a notification for the issue. You need to build a reliable solution for minimum cost What should you do? (Case Study 6)

- A.Create a scheduled job in Cloud Run to invoke a container every minute. The container will check the application URL If the application is down, switch the URL to the "Site is unavailable" page, and notify the Ops team.
- B.Create a cron job on a Compute Engine VM that runs every minute. The cron job invokes a Python program to check the application URL If the application is down, switch the URL to the "Site is unavailable" page, and notify the Ops team.
- C.Create a Cloud Monitoring uptime check to validate the application URL If it fails, put a message in a Pub/Sub queue that triggers a Cloud Function to switch the URL to the "Site is unavailable" page, and notify the Ops team.
- D.Use Cloud Error Reporting to check the application URL If the application is down, switch the URL to the "Site is unavailable" page, and notify the Ops team.

Answer(s): C

Explanation:

<https://cloud.google.com/blog/products/management-tools/how-to-use-pubsub-as-a-cloud-monitoring-notification-channel>

210) You are migrating a Linux-based application from your private data center to Google Cloud. The **TerramEarth** security team sent you several recent Linux vulnerabilities published by Common Vulnerabilities and Exposures (CVE). You need assistance in understanding how these vulnerabilities could impact your migration.
What should you do? (Case Study 6)

- A. Open a support case regarding the CVE and chat with the support engineer.
- B. Read the CVEs from the Google Cloud Status Dashboard to understand the impact.
- C. Read the CVEs from the Google Cloud Platform Security Bulletins to understand the impact
- D. Post a question regarding the CVE in Stack Overflow to get an explanation
- E. Post a question regarding the CVE in a Google Cloud discussion group to get an explanation

Answer(s): A,C

Explanation:

<https://cloud.google.com/support/bulletins>

211) You have broken down a legacy monolithic application into a few containerized RESTful microservices. You want to run those microservices on Cloud Run. You also want to make sure the services are highly available with low latency to your customers. (Case Study 6)

What should you do?

- A. Deploy Cloud Run services to multiple availability zones. Create Cloud Endpoints that point to the services. Create a global HTTP(S) Load Balancing instance and attach the Cloud Endpoints to its backend.
- B. Deploy Cloud Run services to multiple regions. Create serverless network endpoint groups pointing to the services. Add the serverless NEGs to a backend service that is used by a global HTTP(S) Load Balancing instance.**
- C. Deploy Cloud Run services to multiple regions. In Cloud DNS, create a latency-based DNS name that points to the services.
- D. Deploy Cloud Run services to multiple availability zones. Create a TCP/IP global load balancer. Add the Cloud Run Endpoints to its backend service.

Answer(s): B

Explanation:

<https://cloud.google.com/run/docs/multiple-regions>

212) For this question, refer to the **TerramEarth** case study.

(Case Study 6)

You start to build a new application that uses a few Cloud Functions for the backend. One use case requires a Cloud Function func_display to invoke another Cloud Function func_query. You want func_query only to accept invocations from func_display. You also want to follow Google's recommended best practices.

What should you do?

A.Create a token and pass it in as an environment variable to func_display.

When invoking func_query, include the token in the request Pass the same token to func_query and reject the invocation if the tokens are different.

B.**Make func_query 'Require authentication.' Create a unique service account and associate it to func_display. Grant the service account invoker role for func_query. Create an id token in func_display and include the token to the request when invoking func_query.**

C.Make func_query 'Require authentication' and only accept internal traffic. Create those two functions in the same VP Create an ingress firewall rule for func_query to only allow traffic from func_display.

D.Create those two functions in the same project and VPC. Make func_query only accept internal traffic. Create an ingress firewall for func_query to only allow traffic from func_display. Also, make sure both functions use the same service account.

Answer(s): B

Explanation:

https://cloud.google.com/functions/docs/securing/authenticating#authenticating_function_to_function_calls

Case Study 7

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.

213) 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.) (Case Study 7)

- 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.
- C.Draw an architecture diagram that shows how to move from a single MySQL database to a MySQL cluster.
- D.Load 10 TB of analytics data from a previous game into a Cloud SQL instance, and run test queries against the full dataset to confirm that they complete successfully.
- E.Integrate Cloud Armor to defend against possible SQL injection attacks in analytics files uploaded to Cloud Storage.

Answer(s): A,B

Explanation:

https://cloud.google.com/bigquery/docs/loading-data#loading_denormalized_nested_and_repeated_data

214) 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? (Case Study 7)

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

Answer(s): D

215) 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. (Case Study 7)

Which two steps should they take? (Choose two.)

- A.Store as much analytics and game activity data as financially feasible today so it can be used to train machine learning models to predict user behavior in the future.
- B.Begin packaging their game backend artifacts in container images and running them on Kubernetes Engine to improve the availability to scale up or down based on game activity.
- C.Set up a CI/CD pipeline using Jenkins and Spinnaker to automate canary deployments and improve development velocity.
- D.Adopt a schema versioning tool to reduce downtime when adding new game features that require storing additional player data in the database.
- 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(s): B,C

216) 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? (Case Study 7)

- A.Deploy failure injection software to the game analytics platform that can inject additional latency to mobile client analytics traffic.
- B.Build a test client that can be run from a mobile phone emulator on a Compute Engine virtual machine, and run multiple copies in Google Cloud Platform regions all over the world to generate realistic traffic.
- C.Add the ability to introduce a random amount of delay before beginning to process analytics files uploaded from mobile devices.
- 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(s): D

217) 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? (Case Study 7)

- A.Use Cloud SQL for time series data, and use Cloud Bigtable for historical data queries.
- B.Use Cloud SQL to replace MySQL, and use Cloud Spanner for historical data queries.
- C.Use Cloud Bigtable to replace MySQL, and use BigQuery for historical data queries.
- D.Use Cloud Bigtable for time series data, use Cloud Spanner for transactional data, and use BigQuery for historical data queries.**

Answer(s): D

Explanation:

<https://cloud.google.com/bigtable/docs/schema-design-time-series>

218) 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? (Case Study 7)

- A.Cloud Bigtable
- B.Cloud Spanner
- C.BigQuery
- D.Cloud Datastore

Answer(s): A

Explanation:

<https://cloud.google.com/blog/products/databases/getting-started-with-time-series-trend-predictions-using-gcp>

219) 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.

(Case Study 7)

You want to follow Google-recommended practices. How should you design the backend?

- 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.
- 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(s): C

220) You need to optimize batch file transfers into Cloud Storage for Mountkirk Games' new Google Cloud solution. The batch files contain game statistics that need to be staged in Cloud Storage and be processed by an extract transform load (ETL) tool. (Case Study 7)
What should you do?

- A.Use gsutil to batch move files in sequence.
- B.Use gsutil to batch copy the files in parallel.**
- C.Use gsutil to extract the files as the first part of ETL.
- D.Use gsutil to load the files as the last part of ETL.

Answer(s): B

Reference:

<https://cloud.google.com/storage/docs/gsutil/commands/cp>

221) You are implementing Firestore for Mountkirk Games. Mountkirk Games wants to give a new game programmatic access to a legacy game's Firestore database. Access should be as restricted as possible.
What should you do? (Case Study 7)

- A.Create a service account (SA) in the legacy game's Google Cloud project, add this SA in the new game's IAM page, and then give it the Firebase Admin role in both projects
- B.Create a service account (SA) in the legacy game's Google Cloud project, add a second SA in the new game's IAM page, and then give the Organization Admin role to both SAs**
- C.Create a service account (SA) in the legacy game's Google Cloud project, give it the Firebase Admin role, and then migrate the new game to the legacy game's project.
- D.Create a service account (SA) in the Igacy game's Google Cloud project, give the SA the Organization Admin rule and then give it the Firebase Admin role in both projects

Answer(s): B

222) Mountkirk Games wants to limit the physical location of resources to their operating Google Cloud regions. What should you do? (Case Study 7)

- A. Configure an organizational policy which constrains where resources can be deployed.
- B. Configure IAM conditions to limit what resources can be configured.
- C. Configure the quotas for resources in the regions not being used to 0.
- D. Configure a custom alert in Cloud Monitoring so you can disable resources as they are created in other regions.

Answer(s): A

223) You need to implement a network **ingress** for a new game that meets the defined business and technical requirements. Mountkirk Games wants each regional game instance to be located in multiple Google Cloud regions. What should you do? (Case Study 7)

- A.Configure a global load balancer connected to a managed instance group running Compute Engine instances.
- B.Configure kubemci with a global load balancer and Google Kubernetes Engine.
- C.Configure a global load balancer with Google Kubernetes Engine.
- D.Configure Ingress for Anthos with a global load balancer and Google Kubernetes Engine.

Answer(s): A

224) Your development teams release new versions of games running on Google Kubernetes Engine (GKE) daily. You want to create service level indicators (SLIs) to evaluate the quality of the new versions from the user's perspective. What should you do? (Case Study 7)

- A.Create CPU Utilization and Request Latency as service level indicators.
- B.Create GKE CPU Utilization and Memory Utilization as service level indicators.
- C.Create Request Latency and Error Rate as service level indicators.
- D.Create Server Uptime and Error Rate as service level indicators.

Answer(s): C

225) Mountkirk Games wants you to secure the connectivity from the new gaming application platform to Google Cloud. You want to streamline the process and follow Google-recommended practices. (Case Study 7)
What should you do?

- A.Configure Workload Identity and service accounts to be used by the application platform.
- B.Use Kubernetes Secrets, which are obfuscated by default. Configure these Secrets to be used by the application platform.
- C.Configure Kubernetes Secrets to store the secret, enable Application-Layer Secrets Encryption, and use Cloud Key Management Service (Cloud KMS) to manage the encryption keys. Configure these Secrets to be used by the application platform.
- D.Configure HashiCorp Vault on Compute Engine, and use customer managed encryption keys and Cloud Key Management Service (Cloud KMS) to manage the encryption keys. Configure these Secrets to be used by the application platform.

Answer(s): A

226) Your development team has created a mobile game app. You want to test the new mobile app on Android and iOS devices with a variety of configurations. You need to ensure that testing is efficient and cost- effective.
What should you do? (Case Study 7)

- A.Upload your mobile app to the Firebase Test Lab, and test the mobile app on Android and iOS devices.
- B.Create Android and iOS VMs on Google Cloud, install the mobile app on the VMs, and test the mobile app.
- C.Create Android and iOS containers on Google Kubernetes Engine (GKE), install the mobile app on the containers, and test the mobile app.
- D.Upload your mobile app with different configurations to Firebase Hosting and test each configuration.

Answer(s): C

Case Study 8

Company overview

Helicopter Racing League (HRL) is a global sports league for competitive helicopter racing. Each year HRL holds the world championship and several regional league competitions where teams compete to earn a spot in the world championship. HRL offers a paid service to stream the races all over the world with live telemetry and predictions throughout each race.

Solution concept

HRL wants to migrate their existing service to a new platform to expand their use of managed AI and ML services to facilitate race predictions. Additionally, as new fans engage with the sport, particularly in emerging regions, they want to move the serving of their content, both real-time and recorded, closer to their users.

Existing technical environment

HRL is a public cloud-first company; the core of their mission-critical applications runs on their current public cloud provider. Video recording and editing is performed at the race tracks, and the content is encoded and transcoded, where needed, in the cloud. Enterprise-grade connectivity and local compute is provided by truck-mounted mobile data centers. Their race prediction services are hosted exclusively on their existing public cloud provider. Their existing technical environment is as follows:

Existing content is stored in an object storage service on their existing public cloud provider. Video encoding and transcoding is performed on VMs created for each job. Race predictions are performed using TensorFlow running on VMs in the current public cloud provider.

Business requirements

HRL's owners want to expand their predictive capabilities and reduce latency for their viewers in emerging markets. Their requirements are:

Support ability to expose the predictive models to partners. Increase predictive capabilities during and before races:

Race results

Mechanical failures

Crowd sentiment

Increase telemetry and create additional insights.

Measure fan engagement with new predictions.

Enhance global availability and quality of the broadcasts.

Increase the number of concurrent viewers.

Minimize operational complexity.

Ensure compliance with regulations.

Create a merchandising revenue stream.

Technical requirements

Maintain or increase prediction throughput and accuracy.

Reduce viewer latency.

Increase transcoding performance.

Create real-time analytics of viewer consumption patterns and engagement. Create a data mart to enable processing of large volumes of race data.

Executive statement

Our CEO, S. Hawke, wants to bring high-adrenaline racing to fans all around the world. We listen to our fans, and they want enhanced video streams that include predictions of events within the race (e.g., overtaking). Our current platform allows us to predict race outcomes but lacks the facility to support real-time predictions during races and the capacity to process season-long results.

227) For this question, refer to the Helicopter Racing League (HRL) case study. Recently HRL started a new regional racing league in Cape Town, South Africa (Case Study 8)

A.In an effort to give customers in Cape Town a better user experience, HRL has partnered with the Content Delivery Network provider, Fastly. HRL needs to allow traffic coming from all of the Fastly IP address ranges into their Virtual Private Cloud network (VPC network). You are a member of the HRL security team and you need to configure the update that will allow only the Fastly IP

address ranges through the External HTTP(S) load balancer.

Which command should you use?

B.gloud compute firewall rules update hlr-policy \

--priority 1000 \

target tags-sourceiplist fastly \

--allow tcp:443

C.gcloud compute security policies rules update 1000 \

--security-policy hlr-policy \

--expression "evaluatePreconfiguredExpr('sourceiplist-fastly')" \

--action " allow"

D.gcloud compute firewall rules update sourceiplist-fastly \

priority 1000 \

allow tcp: 443

E.gcloud compute priority-policies rules update

1000 \

security policy from fastly

--src- ip-ranges"

-- action " allow"

Answer(s): B

Reference:

<https://cloud.google.com/load-balancing/docs/https/D18912E1457D5D1DDCBD40AB3BF70D5D>

228) For this question, refer to the Helicopter Racing League (HRL) case study. The HRL development team releases a new version of their predictive capability application every Tuesday evening at 3 a.m. UTC to a repository. The security team at HRL has developed an in-house penetration test Cloud Function called Airwolf.

The security team wants to run Airwolf against the predictive capability application as soon as it is released every Tuesday.
You need to set up Airwolf to run at the recurring weekly cadence.

What should you do? (Case Study 8)

- A. Set up Cloud Tasks and a Cloud Storage bucket that triggers a Cloud Function.
- B. Set up a Cloud Logging sink and a Cloud Storage bucket that triggers a Cloud Function.
- C. Configure the deployment job to notify a Pub/Sub queue that triggers a Cloud Function.
- D. Set up Identity and Access Management (IAM) and Confidential Computing to trigger a Cloud Function.

Answer(s): A

229) For this question, refer to the Helicopter Racing League (HRL) case study. HRL wants better prediction accuracy from their ML prediction models. They want you to use Google's AI Platform so HRL can understand and interpret the predictions. (Case Study 8)

What should you do?

- A. Use Explainable AI.
- B. Use Vision AI.
- C. Use Google Cloud's operations suite.
- D. Use Jupyter Notebooks.

Answer(s): A

Reference:

<https://cloud.google.com/ai-platform/prediction/docs/ai-explanations/preparing-metadata>

230) For this question, refer to the Helicopter Racing League (HRL) case study. HRL is looking for a cost- effective approach for storing their race data such as telemetry. They want to keep all historical records, train models using only the previous season's data, and plan for data growth in terms of volume and information collected.

You need to propose a data solution. Considering HRL business requirements and the goals expressed by CEO S. Hawke, what should you do? (Case Study 8)

- A.Use Firestore for its scalable and flexible document-based database. Use collections to aggregate race data by season and event.
- B.Use Cloud Spanner for its scalability and ability to version schemas with zero downtime. Split race data using season as a primary key.
- C.Use BigQuery for its scalability and ability to add columns to a schema. Partition race data based on season.
- D.Use Cloud SQL for its ability to automatically manage storage increases and compatibility with MySQL. Use separate database instances for each season.

Answer(s): C

Reference:

<https://cloud.google.com/bigquery/public-data>

231) For this question, refer to the Helicopter Racing League (HRL) case study. A recent finance audit of cloud infrastructure noted an exceptionally high number of Compute Engine instances are allocated to do video encoding and transcoding. You suspect that these Virtual Machines are zombie machines that were not deleted after their workloads completed. You need to quickly get a list of which VM instances are idle.

What should you do? (Case Study 8)

- A.Log into each Compute Engine instance and collect disk, CPU, memory, and network usage statistics for analysis.
- B.Use the gcloud compute instances list to list the virtual machine instances that have the idle: true label set.
- C.Use the gcloud recommender command to list the idle virtual machine instances.**
- D.From the Google Console, identify which Compute Engine instances in the managed instance groups are no longer responding to health check probes.

Answer(s): C

Reference:

<https://cloud.google.com/compute/docs/instances/viewing-and-applying-idle-vm-recommendations>

Case Study 9

Company overview

EHR Healthcare is a leading provider of electronic health record software to the medical industry. EHR Healthcare provides their software as a service to multi-national medical offices, hospitals, and insurance providers.

Solution concept

Due to rapid changes in the healthcare and insurance industry, EHR Healthcare's business has been growing exponentially year over year. They need to be able to scale their environment, adapt their disaster recovery plan, and roll out new continuous deployment capabilities to update their software at a fast pace. Google Cloud has been chosen to replace their current colocation facilities.

Existing technical environment

EHR's software is currently hosted in multiple colocation facilities. The lease on one of the data centers is about to expire.

Customer-facing applications are web-based, and many have recently been containerized to run on a group of Kubernetes clusters. Data is stored in a mixture of relational and NoSQL databases (MySQL,

MS SQL Server, Redis, and MongoDB).

EHR is hosting several legacy file- and API-based integrations with insurance providers on-premises. These systems are scheduled to be replaced over the next several years. There is no plan to upgrade or move these systems at the current time.

Users are managed via Microsoft Active Directory. Monitoring is currently being done via various open source tools. Alerts are sent via email and are often ignored.

Business requirements

- On-board new insurance providers as quickly as possible.
- Provide a minimum 99.9% availability for all customer-facing systems.
- Provide centralized visibility and proactive action on system performance and usage.
- Increase ability to provide insights into healthcare trends.
- Reduce latency to all customers.
- Maintain regulatory compliance.
- Decrease infrastructure administration costs.
- Make predictions and generate reports on industry trends based on provider data.

Technical requirements

- Maintain legacy interfaces to insurance providers with connectivity to both on-premises systems and cloud providers.
- Provide a consistent way to manage customer-facing applications that are container-based.
- Provide a secure and high-performance connection between on-premises systems and Google Cloud.
- Provide consistent logging, log retention, monitoring, and alerting capabilities.
- Maintain and manage multiple container-based environments.
- Dynamically scale and provision new environments.
- Create interfaces to ingest and process data from new providers.

Executive statement

Our on-premises strategy has worked for years but has required a major investment of time and money in training our team on distinctly different systems, managing similar but separate environments, and responding to outages. Many of these outages have been a result of misconfigured systems, inadequate capacity to manage spikes in traffic, and inconsistent monitoring practices. We want to use Google Cloud to leverage a scalable, resilient platform that can span multiple environments seamlessly and provide a consistent and stable user experience that positions us for future growth.

232) For this question, refer to the EHR Healthcare case study. You are responsible for ensuring that EHR's use of Google Cloud will pass an upcoming privacy compliance audit.

What should you do? (Choose two.) (Case Study 9)

- A.Verify EHR's product usage against the list of compliant products on the Google Cloud compliance page.
- B.Advise EHR to execute a Business Associate Agreement (BAA) with Google Cloud.
- C.Use Firebase Authentication for EHR's user facing applications.
- D.Implement Prometheus to detect and prevent security breaches on EHR's web-based applications.
- E.Use GKE private clusters for all Kubernetes workloads.

Answer(s): A,B

Explanation:

<https://cloud.google.com/security/compliance/hipaa>

233) For this question, refer to the EHR Healthcare case study. You need to define the technical architecture for securely deploying workloads to Google Cloud. You also need to ensure that only verified containers are deployed using Google Cloud services.

What should you do? (Choose two.) (Case Study 9)

- A. Enable Binary Authorization on GKE, and sign containers as part of a CI/CD pipeline.
- B. Configure Jenkins to utilize Kritis to cryptographically sign a container as part of a CI/CD pipeline.
- C. Configure Container Registry to only allow trusted service accounts to create and deploy containers from the registry.
- D. Configure Container Registry to use vulnerability scanning to confirm that there are no vulnerabilities before deploying the workload.

Answer(s): A

Explanation:

Binary Authorization to ensure only verified containers are deployed To ensure deployment are secure and and consistent, automatically scan images for vulnerabilities with container analysis (https://cloud.google.com/docs/ci-cd/overview?hl=en&skip_cache=true)

234) You need to upgrade the EHR connection to comply with their requirements. The new connection design must support business-critical needs and meet the same network and security policy requirements.

What should you do? (Case Study 9)

- A.Add a new Dedicated Interconnect connection.
- B.Upgrade the bandwidth on the Dedicated Interconnect connection to 100 G.
- C.Add three new Cloud VPN connections.
- D.Add a new Carrier Peering connection.

Answer(s): D

235) For this question, refer to the EHR Healthcare case study. You need to define the technical architecture for hybrid connectivity between EHR's on-premises systems and Google Cloud. You want to follow Google's recommended practices for production-level applications. Considering the EHR Healthcare business and technical requirements, what should you do? (Case Study 9)

- A.Configure two Partner Interconnect connections in one metro (City), and make sure the Interconnect connections are placed in different metro zones.
- B.Configure two VPN connections from on-premises to Google Cloud, and make sure the VPN devices on-premises are in separate racks.
- C.Configure Direct Peering between EHR Healthcare and Google Cloud, and make sure you are peering at least two Google locations.
- D.Configure two Dedicated Interconnect connections in one metro (City) and two connections in another metro, and make sure the Interconnect connections are placed in different metro zones.**

Answer(s): D

Explanation:

based on the requirement of secure and high-performance connection between on-premises systems to Google Cloud
[https://cloud.google.com/network-connectivity/docs/interconnect/tutorials/partner-creating-9999- availability](https://cloud.google.com/network-connectivity/docs/interconnect/tutorials/partner-creating-9999-availability)

236) For this question, refer to the EHR Healthcare case study. You are a developer on the EHR customer portal team. Your team recently migrated the customer portal application to Google Cloud. The load has increased on the application servers, and now the application is logging many timeout errors. You recently incorporated Pub/Sub into the application architecture, and the application is not logging any Pub/Sub publishing errors. You want to improve publishing latency. What should you do? (Case Study 9)

- A.Increase the Pub/Sub Total Timeout retry value.
- B.Move from a Pub/Sub subscriber pull model to a push model.
- C.Turn off Pub/Sub message batching.**
- D.Create a backup Pub/Sub message queue.

Answer(s): C

Explanation:

<https://cloud.google.com/pubsub/docs/publisher?hl=en#batching>

237) For this question, refer to the EHR Healthcare case study. In the past, configuration errors put public IP addresses on backend servers that should not have been accessible from the Internet. You need to ensure that no one can put external IP addresses on backend Compute Engine instances and that external IP addresses can only be configured on frontend Compute Engine instances.

What should you do? (Case Study 9)

- A.Create an Organizational Policy with a constraint to allow external IP addresses only on the frontend Compute Engine instances.
- B.Revoke the compute.networkAdmin role from all users in the project with front end instances.
- C.Create an Identity and Access Management (IAM) policy that maps the IT staff to the compute.networkAdmin role for the organization.
- D.Create a custom Identity and Access Management (IAM) role named GCE_FRONTEND with the compute.addresses.create permission.

Answer(s): A

Explanation:

<https://cloud.google.com/compute/docs/ip-addresses/reserve-static-external-ip-address#disableexternalip>

238) For this question, refer to the EHR Healthcare case study. You are responsible for designing the Google Cloud network architecture for Google Kubernetes Engine. You want to follow Google best practices. Considering the EHR Healthcare business and technical requirements, what should you do to reduce the attack surface? (Case Study 9)

- A. Use a private cluster with a private endpoint with master authorized networks configured.
- B. Use a public cluster with firewall rules and Virtual Private Cloud (VPC) routes.
- C. Use a private cluster with a public endpoint with master authorized networks configured.
- D. Use a public cluster with master authorized networks enabled and firewall rules.

Answer(s): A

Explanation:

<https://cloud.google.com/kubernetes-engine/docs/concepts/private-cluster-concept#overview>

239) For this question, refer to the EHR Healthcare case study. EHR has single Dedicated Interconnect connection between their primary data center and Googles network. This connection satisfies EHR's network and security policies:

(Case Study 9)

- On-premises servers without public IP addresses need to connect to cloud resources without public IP addresses
- Traffic flows from production network mgmt. servers to Compute Engine virtual machines should never traverse the public internet.

You need to upgrade the EHR connection to comply with their requirements. The new connection design must support business critical needs and meet the same network and security policy requirements.

What should you do?

- A.Add a new Dedicated Interconnect connection
- B.Upgrade the bandwidth on the Dedicated Interconnect connection to 100 G
- C.Add three new Cloud VPN connections
- D.Add a new Carrier Peering connection

Answer(s): A

Explanation:

The case does not call out the throughput being an issue. However, to achieve 99.99%, you need to have 4 connections as per Google recommendations. However, in the options only A has the option to add an additional Interconnect connection.

<https://cloud.google.com/network-connectivity/docs/interconnect/concepts/dedicated-overview#availability>

240) One of the developers on your team deployed their application in Google Container Engine with the Dockerfile below. They report that their application deployments are taking too long.

```
FROM ubuntu:16.04
COPY . /src
RUN apt-get update && apt-get install -y python python-pip
RUN pip install -r requirements.txt
```

You want to optimize this Dockerfile for faster deployment times without adversely affecting the app's functionality.

Which two actions should you take? Choose 2 answers.

- A.Remove Python after running pip.
- B.Remove dependencies from requirements.txt.
- C.Use a slimmed-down base image like Alpine linux.
- D.Use larger machine types for your Google Container Engine node pools.
- E.Copy the source after the package dependencies (Python and pip) are installed.

Answer(s): C,E

241) Your solution is producing **performance bugs** in production that you did not see in staging and test environments. You want to adjust your test and deployment procedures to avoid this problem in the future. What should you do?

- A.Deploy fewer changes to production.
- B.Deploy smaller changes to production.
- C.Increase the load on your test and staging environments.**
- D.Deploy changes to a small subset of users before rolling out to production.

Answer(s): C

242) Your company has decided to make a major revision of their API in order to create better experiences for their developers. They need to keep the old version of the API available and deployable, while allowing new customers and testers to try out the new API. They want to keep the same SSL and DNS records in place to serve both APIs. What should they do?

- A.Configure a new load balancer for the new version of the API.
- B.Reconfigure old clients to use a new endpoint for the new API.
- C.Have the old API forward traffic to the new API based on the path.
- D.Use separate backend pools for each API path behind the load balancer.**

DUPLICATE

Answer(s): D

Explanation:

<https://cloud.google.com/endpoints/docs/openapi/lifecycle-management>

243) A small number of API requests to your microservices-based application take a very long time. You know that each request to the API can traverse many services. You want to know which service takes the longest in those cases. What should you do?

- A. Set timeouts on your application so that you can fail requests faster.
- B. Send custom metrics for each of your requests to Stackdriver Monitoring.
- C. Use Stackdriver Monitoring to look for insights that show when your API latencies are high.
- D. Instrument your application with Stackdriver Trace in order to break down the request latencies at each microservice.

Answer(s): D

Explanation:

<https://cloud.google.com/trace/docs/overview>

244) During a high traffic portion of the day, one of your relational databases crashes, but the replica is never promoted to a master. You want to avoid this in the future.

What should you do?

- A. Use a different database.
- B. Choose larger instances for your database.
- C. Create snapshots of your database more regularly.
- D. Implement routinely scheduled failovers of your databases.

Answer(s): D

Explanation:

<https://cloud.google.com/solutions/dr-scenarios-planning-guide>

245) Your organization requires that metrics from all applications be retained for 5 years for future analysis in possible legal proceedings.

Which approach should you use?

- A.Grant the security team access to the logs in each Project.
- B.Configure Stackdriver Monitoring for all Projects, and export to BigQuery.
- C.Configure Stackdriver Monitoring for all Projects with the default retention policies.
- D.Configure Stackdriver Monitoring for all Projects, and export to Google Cloud Storage.**

Answer(s): D

Explanation:

Overview of storage classes, price, and use cases <https://cloud.google.com/storage/docs/storage-classes>

Why export logs? <https://cloud.google.com/logging/docs/export/> StackDriver Quotas and Limits for Monitoring

<https://cloud.google.com/monitoring/quotas>

The BigQuery pricing. <https://cloud.google.com/bigquery/pricing>

246) Your company has decided to build a backup replica of their on-premises user authentication PostgreSQL database on Google Cloud Platform. The database is 4 TB, and large updates are frequent. Replication requires private address space communication.

Which networking approach should you use?

- A. Google Cloud Dedicated Interconnect
- B. Google Cloud VPN connected to the data center network
- C. A NAT and TLS translation gateway installed on-premises
- D. A Google Compute Engine instance with a VPN server installed connected to the data center network

Answer(s): A

Explanation:

<https://cloud.google.com/docs/enterprise/best-practices-for-enterprise-organizations>

247) Your company is forecasting a sharp increase in the number and size of Apache Spark and Hadoop jobs being run on your local datacenter. You want to utilize the cloud to help you scale this upcoming demand with the least amount of operations work and code change.

Which product should you use?

- A. Google Cloud Dataflow
- B. Google Cloud Dataproc**
- C. Google Compute Engine
- D. Google Container Engine

Answer(s): B

Explanation:

Google Cloud Dataproc is a fast, easy-to-use, low-cost and fully managed service that lets you run the Apache Spark and Apache Hadoop ecosystem on Google Cloud Platform. Cloud Dataproc provisions big or small clusters rapidly, supports many popular job types, and is integrated with other Google Cloud Platform services, such as Google Cloud Storage and Stackdriver Logging, thus helping you reduce TCO.

Reference:

<https://cloud.google.com/dataproc/docs/resources/faq>

248) Your company's test suite is a custom C++ application that runs tests throughout each day on Linux virtual machines. The full test suite takes several hours to complete, running on a limited number of on premises servers reserved for testing. Your company wants to move the testing infrastructure to the cloud, to reduce the amount of time it takes to fully test a change to the system, while changing the tests as little as possible.
Which cloud infrastructure should you recommend?

- A.Google Compute Engine unmanaged instance groups and Network Load Balancer
- B.Google Compute Engine managed instance groups with auto-scaling**
- C.Google Cloud Dataproc to run Apache Hadoop jobs to process each test
- D.Google App Engine with Google Stackdriver for logging

Answer(s): B

Explanation:

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

249) **Auditors visit** your teams every 12 months and ask to review all the Google Cloud Identity and Access Management (Cloud IAM) policy changes in the previous 12 months. You want to streamline and expedite the analysis and audit process.

What should you do?

- A.Create custom Google Stackdriver alerts and send them to the auditor.
- B.Enable Logging export to Google BigQuery and use ACLs and views to scope the data shared with the auditor.**
- C.Use cloud functions to transfer log entries to Google Cloud SQL and use ACLS and views to limit an auditor's view.
- D.Enable Google Cloud Storage (GCS) log export to audit logs Into a GCS bucket and delegate access to the bucket.**

Answer(s): D

Explanation:

Export the logs to Google Cloud Storage bucket - Archive Storage, as it will not be used for 1 year, price for which is \$0.004 per GB per Month. The price for long term storage in BigQuery is \$0.01 per GB per Month (250% more). Also for analysis purpose, whenever Auditors are there(once per year), you can use BigQuery and use GCS bucket as external data source. BigQuery supports querying Cloud Storage data from these storage classes:

Standard Nearline Coldline Archive

250) You are designing a large distributed application with 30 microservices. Each of your distributed microservices needs to connect to a database back-end. You want to store the credentials securely. Where should you store the credentials?

- A.In the source code
- B.In an environment variable
- C.In a secret management system
- D.In a config file that has restricted access through ACLs

Answer(s): C

Explanation:

https://cloud.google.com/docs/authentication/production#providing_credentials_to_your_application

251) The operations manager asks you for a list of recommended practices that she should consider when migrating a J2EE application to the cloud.

Which three practices should you recommend? Choose 3 answers

- A.Port the application code to run on Google App Engine.
- B.Integrate Cloud Dataflow into the application to capture real-time metrics.
- C.Instrument the application with a monitoring tool like Stackdriver Debugger.
- D.Select an automation framework to reliably provision the cloud infrastructure.
- E.Deploy a continuous integration tool with automated testing in a staging environment.
- F.Migrate from MySQL to a managed NoSQL database like Google Cloud Datastore or Bigtable.

Answer(s): A,E,F

Reference:

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

252) You want to enable your running Google Kubernetes Engine cluster to scale as demand for your application changes.

What should you do?

- A.Add additional nodes to your Kubernetes Engine cluster using the following command:gcloud container clusters resizeCLUSTER_Name -size 10
- B.Add a tag to the instances in the cluster with the following command:gcloud compute instances add-tagsINSTANCE --tags enable-autoscaling max-nodes=10
- C.Update the existing Kubernetes Engine cluster with the following command:gcloud alpha container clustersupdate mycluster --enable-autoscaling --min-nodes=1 --max-nodes=10
- D.Create a new Kubernetes Engine cluster with the following command:gcloud alpha container clusterscreate mycluster --enable-autoscaling --min-nodes=1 --max-nodes=10and redeploy your application

Answer(s): C

Explanation:

<https://cloud.google.com/kubernetes-engine/docs/concepts/cluster-autoscaler> To enable autoscaling for an existing node pool, run the following command:

```
gcloud container clusters update [CLUSTER_NAME] --enable-autoscaling \ --min-nodes 1 --max-nodes 10 --zone [COMPUTE_ZONE] --node-pool default-pool
```

253) A lead engineer wrote a custom tool that deploys virtual machines in the legacy data center. He wants to migrate the custom tool to the new cloud environment. You want to advocate for the adoption of Google Cloud Deployment Manager. What are two business risks of migrating to Cloud

Deployment Manager? Choose 2 answers

- A.Cloud Deployment Manager uses Python.
- B.Cloud Deployment Manager APIs could be deprecated in the future.
- C.Cloud Deployment Manager is unfamiliar to the company's engineers.
- D.Cloud Deployment Manager requires a Google APIs service account to run.
- E.Cloud Deployment Manager can be used to permanently delete cloud resources.
- F.Cloud Deployment Manager only supports automation of Google Cloud resources.

Answer(s): C,F

Explanation:

<https://cloud.google.com/deployment-manager/docs/deployments/deleting-deployments>

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

- A.Compute Engine with containers
- B.Google Kubernetes Engine with containers**
- C.Google App Engine Standard Environment**
- D.Compute Engine with custom instance types
- E.Compute Engine with managed instance groups

Answer(s): B,C

Explanation:

B: With Container Engine, Google will automatically deploy your cluster for you, update, patch, secure the nodes. Kubernetes Engine's cluster autoscaler automatically resizes clusters based on the demands of the workloads you want to run.

C: Solutions like Datastore, BigQuery, AppEngine, etc are truly NoOps. App Engine by default scales the number of instances running up and down to match the load, thus providing consistent performance for your app at all times while minimizing idle instances and thus reducing cost.

Note: At a high level, NoOps means that there is no infrastructure to build out and manage during usage of the platform. Typically, the compromise you make with NoOps is that you lose control of the underlying infrastructure.

255) A development manager is building a new application. He asks you to review his requirements and identify what cloud technologies he can use to meet them. The application must

1. Be based on open-source technology for cloud portability
2. Dynamically scale compute capacity based on demand
3. Support continuous software delivery
4. Run multiple segregated copies of the same application stack
5. Deploy application bundles using dynamic templates
6. Route network traffic to specific services based on URL

Which combination of technologies will meet all of his requirements?

- A. Google Container Engine, Jenkins, and Helm
- B. Google Container Engine and Cloud Load Balancing
- C. Google Compute Engine and Cloud Deployment Manager
- D. Google Compute Engine, Jenkins, and Cloud Load Balancing

Answer(s): A

256) Your marketing department wants to send out a promotional email campaign. The development team wants to minimize direct operation management. They project a wide range of possible customer responses, from 100 to 500,000 click-throughs per day. The link leads to a simple website that explains the promotion and collects user information and preferences.

Which infrastructure should you recommend? (CHOOSE TWO)

- A. Use Google App Engine to serve the website and Google Cloud Datastore to store user data.
- B. Use a Google Container Engine cluster to serve the website and store data to persistent disk.
- C. Use a managed instance group to serve the website and Google Cloud Bigtable to store user data.
- D. Use a single compute Engine virtual machine (VM) to host a web server, backed by Google Cloud SQL.

Answer(s): A,C

257) One of your primary business objectives is being able to trust the data stored in your application. You want to log all changes to the application data. How can you design your logging system to verify authenticity of your logs?

- A. Write the log concurrently in the cloud and on premises.
- B. Use a SQL database and limit who can modify the log table.
- C. Digitally sign each timestamp and log entry and store the signature.
- D. Create a JSON dump of each log entry and store it in Google Cloud Storage.

Answer(s): C

Explanation:

<https://cloud.google.com/storage/docs/access-logs>

258) You have created several preemptible Linux virtual machine instances using Google Compute Engine. You want to properly shut down your application before the virtual machines are preempted. What should you do?

- A.Create a shutdown script named k99.shutdown in the /etc/rc.6.d/ directory.
- B.Create a shutdown script registered as a xinetd service in Linux and configure a StackDriver endpoint check to call the service.
- C.Create a shutdown script and use it as the value for a new metadata entry with the key shutdown- script in the Cloud Platform Console when you create the new virtual machine instance.
- D.Create a shutdown script, registered as a xinetd service in Linux, and use the gcloud compute instances add-metadata command to specify the service URL as the value for a new metadata entry with the key shutdown-script-url

Answer(s): C

259) 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?

- A.In the Cloud Platform Console, increase the size of the persistent disk and use the resize2fs command in Linux.
- 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(s): A

260) Your organization has a 3-tier web application deployed in the same network on Google Cloud Platform. Each tier (web, API, and database) scales independently of the others Network traffic should flow through the web to the API tier and then on to the database tier. Traffic should not flow between the web and the database tier. How should you configure the network?

- A.Add each tier to a different subnetwork.
- B.Set up software based firewalls on individual VMs.
- C.Add tags to each tier and set up routes to allow the desired traffic flow.
- D.Add tags to each tier and set up firewall rules to allow the desired traffic flow.**

Answer(s): D

Explanation:

<https://aws.amazon.com/blogs/aws/building-three-tier-architectures-with-security-groups/>

Google Cloud Platform(GCP) enforces firewall rules through rules and tags. GCP rules and tags can be defined once and used across all regions.

261) To reduce costs, the Director of Engineering has required all developers to move their development infrastructure resources from on-premises virtual machines (VMs) to Google Cloud Platform. These resources go through multiple start/stop events during the day and require state to persist. You have been asked to design the process of running a development environment in Google Cloud while providing cost visibility to the finance department.

Which two steps should you take? Choose 2 answers

- A. Use the --no-auto-delete flag on all persistent disks and stop the VM.
- B. Use the -auto-delete flag on all persistent disks and terminate the VM.
- C. Apply VM CPU utilization label and include it in the BigQuery billing export.
- D. Use Google BigQuery billing export and labels to associate cost to groups.
- E. Store all state into local SSD, snapshot the persistent disks, and terminate the VM.
- F. Store all state in Google Cloud Storage, snapshot the persistent disks, and terminate the VM.

Answer(s): A,D

Explanation:

<https://cloud.google.com/billing/docs/how-to/export-data-bigquery>

262) 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?

- 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 users usage of the app, and deploy enough resources to handle 200% of expected load.

Answer(s): A

263) Your customer is moving an existing corporate application to Google Cloud Platform from an on-premises data center. The business owners require minimal user disruption. There are strict security team requirements for storing passwords.

What authentication strategy should they use?

- A. Use G Suite Password Sync to replicate passwords into Google.
- B. Federate authentication via SAML 2.0 to the existing Identity Provider.**
- C. Provision users in Google using the Google Cloud Directory Sync tool.
- D. Ask users to set their Google password to match their corporate password.

Answer(s): B

Explanation:

<https://cloud.google.com/solutions/authenticating-corporate-users-in-a-hybrid-environment>

264) Your customer is moving their corporate applications to Google Cloud Platform. The security team wants detailed visibility of all projects in the organization. You provision the Google Cloud Resource Manager and set up yourself as the org admin.

What Google Cloud Identity and Access Management (Cloud IAM) roles should you give to the security team?

- A.Org viewer, project owner
- B.Org viewer, project viewer**
- C.Org admin, project browser
- D.Project owner, network admin

Answer(s): B

Explanation:

<https://cloud.google.com/iam/docs/using-iam-securely>

265) Your company places a high value on being responsive and meeting customer needs quickly. Their primary business objectives are release speed and agility. You want to reduce the chance of security errors being accidentally introduced. Which two actions can you take? Choose 2 answers

- A. Ensure every code check-in is peer reviewed by a security SME.
- B. Use source code security analyzers as part of the CI/CD pipeline.**
- C. Ensure you have stubs to unit test all interfaces between components.
- D. Enable code signing and a trusted binary repository integrated with your CI/CD pipeline.
- E. Run a vulnerability security scanner as part of your continuous-integration /continuous-delivery (CI/CD) pipeline.**

Answer(s): B,E

Explanation:

<https://docs.microsoft.com/en-us/vsts/articles/security-validation-cicd-pipeline?view=vsts>

266) You are helping the QA team to roll out a new load-testing tool to test the scalability of your primary cloud services that run on Google Compute Engine with Cloud Bigtable.

Which three requirements should they include? Choose 3 answers

- A. Ensure that the load tests validate the performance of Cloud Bigtable.
- B. Create a separate Google Cloud project to use for the load-testing environment.
- C. Schedule the load-testing tool to regularly run against the production environment.
- D. Ensure all third-party systems your services use are capable of handling high load.
- E. Instrument the production services to record every transaction for replay by the load-testing tool.
- F. Instrument the load-testing tool and the target services with detailed logging and metrics collection.

Answer(s): A,B,F

267) You want to make a copy of a production Linux virtual machine in the US-Central region. You want to manage and replace the copy easily if there are changes on the production virtual machine. You will deploy the copy as a new instances in a different project in the US-East region.

What steps must you take?

- A. Use the Linux dd and netcat command to copy and stream the root disk contents to a new virtual machine instance in the US-East region.
- B. Create a snapshot of the root disk and select the snapshot as the root disk when you create a new virtual machine instance in the US-East region.
- C. Create an image file from the root disk with Linux dd command, create a new disk from the image file, and use it to create a new virtual machine instance in the US-East region
- 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(s): D

Explanation:

<https://stackoverflow.com/questions/36441423/migrate-google-compute-engine-instance-to-a-different-region>

268) Your company runs several databases on a single MySQL instance. They need to take backups of a specific database at regular intervals. The backup activity needs to complete as quickly as possible and cannot be allowed to impact disk performance. How should you configure the storage?

- A.Configure a cron job to use the gcloud tool to take regular backups using persistent disk snapshots.
- B.Mount a Local SSD volume as the backup location. After the backup is complete, use gsutil to move the backup to Google Cloud Storage.**
- C.Use gcsfuse to mount a Google Cloud Storage bucket as a volume directly on the instance and write backups to the mounted location using mysqldump
- D.Mount additional persistent disk volumes onto each virtual machine (VM) instance in a RAID10 array and use LVM to create snapshots to send to Cloud Storage.

Answer(s): B

Explanation:

<https://cloud.google.com/compute/docs/instances/sql-server/best-practices>

269) You deploy your custom Java application to Google App Engine. It fails to deploy and gives you the following stack trace.

DUPLICATE

What should you do?

- A.Upload missing JAR files and redeploy your application.
- B.Digitally sign all of your JAR files and redeploy your application**
- C.Recompile the CloakedServlet class using and MD5 hash instead of SHA1

Answer(s): B

270) The application reliability team at your company has added a debug feature to their backend service to send all server events to Google Cloud Storage for eventual analysis. The event records are at least 50 KB and at most 15 MB and are expected to peak at 3,000 events per second. You want to minimize data loss.

Which process should you implement?

A.

- Append metadata to file body.
- Compress individual files.
- Name files with serverName-Timestamp.
- Create a new bucket if bucket is older than 1 hour and save individual files to the new bucket.

Otherwise, save files to existing bucket

B.

- Batch every 10,000 events with a single manifest file for metadata.
- Compress event files and manifest file into a single archive file.
- Name files using serverName-EventSequence.
- Create a new bucket if bucket is older than 1 day and save the single archive file to the new bucket. Otherwise, save the single archive file to existing bucket.

C.

- Compress individual files.
- Name files with serverName-EventSequence.
- Save files to one bucket
- Set custom metadata headers for each object after saving.

D.

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

Answer(s): D

Explanation:

In order to maintain a high request rate, avoid using sequential names. Using completely random object names will give you the best load distribution. Randomness after a common prefix is effective under the prefix
<https://cloud.google.com/storage/docs/request-rate>

271) A lead software engineer tells you that his new application design uses websockets and HTTP sessions that are not distributed across the web servers. You want to help him ensure his application will run properly on Google Cloud Platform. What should you do?

- A.Help the engineer to convert his websocket code to use HTTP streaming.
- B.Review the encryption requirements for websocket connections with the security team.
- C.Meet with the cloud operations team and the engineer to discuss load balancer options.**
- D.Help the engineer redesign the application to use a distributed user session service that does not rely on websockets and HTTP sessions.

Answer(s): C

Explanation:

Google Cloud Platform (GCP) HTTP(S) load balancing provides global load balancing for HTTP(S) requests destined for your instances.

The HTTP(S) load balancer has native support for the WebSocket protocol.

Incorrect Answers:

A: HTTP server push, also known as HTTP streaming, is a client-server communication pattern that sends information from an HTTP server to a client asynchronously, without a client request. A server push architecture is especially effective for highly interactive web or mobile applications, where one or more clients need to receive continuous information from the server.

272) You want to enable your running Google Container Engine cluster to scale as demand for your application changes. What should you do?

A.Add additional nodes to your Container Engine cluster using the following command:

```
gcloud container clusters resize CLUSTER_NAME --size 10
```

B.Add a tag to the instances in the cluster with the following command:

```
gcloud compute instances add-tags INSTANCE --tags enable --autoscaling max-nodes-10
```

C.Update the existing Container Engine cluster with the following command:

```
gcloud alpha container clusters update mycluster --enable-autoscaling --min-nodes=1 --max-nodes=10
```

D.Create a new Container Engine cluster with the following command:

```
gcloud alpha container clusters create mycluster --enable-autocaling --min-nodes=1 --max-nodes=10 and  
redeploy your application.
```

Answer(s): B

Reference:

<https://cloud.google.com/sdk/gcloud/reference/container/clusters/create>

273) You deploy your custom java application to google app engine. It fails to deploy and gives you the following stack trace:

- A.Recompile the CLoakedServlet class using and MD5 hash instead of SHA1
- B.Digitally sign all of your JAR files and redeploy your application.**
- C.Upload missing JAR files and redeploy your application

```
Java.lang.securityException : SHA1 digest  
At com.google.appengine.runtime.Request.pr  
  
At  
  
Sun.securityutil.manifestEntryVerifier.ver  
  
At java.net.URLClassLoader.defineCla  
  
At sun.reflect.GeneratedMethodAccessors  
  
At  
  
Sun.reflect.DelegatingMethodAccessoImpl.  
  
At java.lang.reflect.Method.invoke
```

Answer(s): B

274) 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?

- A.Log in to a server, and iterate a fix locally
- B.Change the instance group template to the previous one, and delete all instances.
- C.Revert the source code change and rerun the deployment pipeline**
- D.Log into the servers with the bad code change, and swap in the previous code

Answer(s): C

275) A recent audit that a new network was created in Your GCP project. In this network, a GCE instance has an SSH port open the world. You want to discover this network's origin.

What should you do?

- 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.
- 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(s): C

276) 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?

- A.Configure their replication to use UDP.
- B.Configure a Google Cloud Dedicated Interconnect.**
- C.Restore their database daily using Google Cloud SQL.
- D.Add additional VPN connections and load balance them.
- E.Send the replicated transaction to Google Cloud Pub/Sub.

Answer(s): B