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Practice Test 1

Completed on 28-January-2021



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1	Other	30	0	0	30	0
2	Deploying applications	20	0	1	19	0
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Review the Answers

Sorting by

All

Question 1

Unattempted

Domain : Other

You have an application that periodically needs to fetch data online and then upload it to BigQuery and Cloud Storage.

You have prepared a bash script to complete the operation.

What do you have to do in order to authorize the procedure in an automated, simple and scalable way in the VM of the managed instance group on which it is installed?

- A. Create the virtual machine with an image or script that provides the necessary roles

- B. Set up a service account with the correct privileges and create the instance template of the virtual machine with this service account ✓
- C. Write all the proper and needed credentials in the code
- D. Create a procedure in App Engine and translate the script in code in order to load the data

Explanation:

Correct Answer B

A and C are wrong for security reasons. You are never advised to expose security information in clear text.

D is wrong because there is no need to code in programming language and, in any case, this not solve out issue.



A service account is a special type of Google account that acts as a non-human user and that can be authenticated and authorized to access resources in GCP.

An instance template is a resource that you can use to create VM instances and managed instance groups.

Instance templates define the machine type, image, identity tags, service accounts and other instance properties.

So, you have to create a service account, grant all the required privileges and then create new virtual machine instances to run as the new service account.

Important: virtual machine instances can use the same service account, but a virtual machine instance can only have one service account identity. If you assign the same service account to multiple virtual machine instances, any subsequent changes you make to the service account will affect instances using the service account.

For any further detail:

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

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

<https://cloud.google.com/compute/docs/access/create-enable-service-accounts-for-instances>

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Question 2

Unattempted

Domain : Other

You have an app in App Engine Standard Edition that needs to use Cloud SQL. Which, among the following, is the best method to authorize all operations safely?

- A. Configure the service account 
- B. Grant all authorizations in the app.yaml file
- C. Use JWT
- D. Grant all authorizations in the index.yaml file
- E. Store the service account key in code

Explanation:

Correct Answer A

B and D are wrong because it is not allowed to store security information or keys in configuration files.

C is wrong because JSON Web Token (JWT) is an open standard that defines a compact and self-contained way for securely transmitting information between parties as a JSON object.

You may sign a JWT token with a service account key and exchange the signed JWT with Google with an OAuth2 procedure.

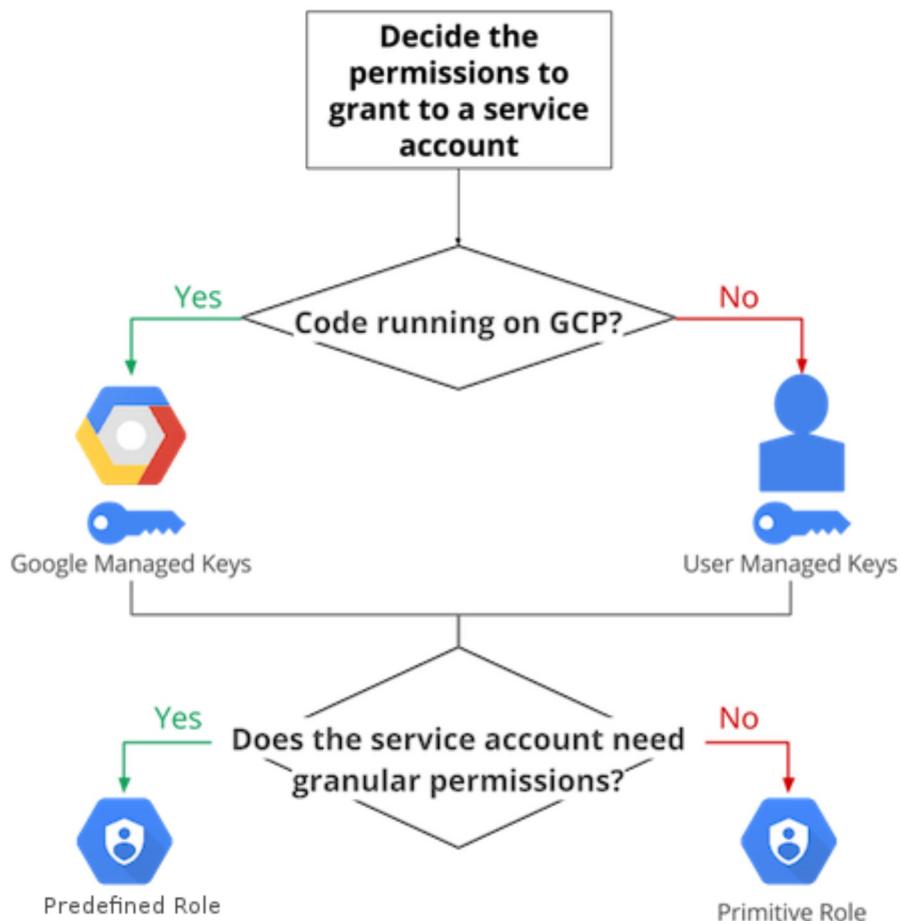
But it is complicated and useless because you have to authorize your app to use Cloud SQL, not the users.

E is wrong because you can transmit service account key only through secure ways (key store, vaults, secured storage); also here it is unnecessarily tricky.

The best way is to configure and use the default service account, automatically created with the app.

A service account is a special type of Google account that acts as a non-human user and that can be authenticated and authorized to access resources in GCP.

You can change the permissions for this service account as needed.



For any further detail:

<https://cloud.google.com/appengine/docs/standard/java11/config/appref>

<https://cloud.google.com/appengine/docs/standard/python/access-control>

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

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Question 3**Unattempted**

Domain : Other

You set up an application to be deployed in a Kubernetes Cluster with GKE. Your app uses various Cloud services, including Cloud Spanner and Cloud Pub / Sub and you are requested to find an optimized way to run the system.

What is the best way to securely authorize all operations?

- A. Write the login credentials of a user enabled to those Services in the Deployment manifest file in YAML format
- B. Associate a specific service account with the configuration of the specific node pool (NodeConfig)
- C. Create a service account and use the corresponding key with a K8s secret 
- D. Write the credentials in the source repository or inside the container image

Explanation:

Correct Answer C

A and D are wrong because you are never advised to write the credentials, in the code or in some configuration file and so, expose security information in clear text.

The best method is always through the use of Service Accounts.

You can configure the Service Account to be associated each time a VM is created, but the privileges to be assigned can be different among the various applications in the various pods that may share the same VM. So option B is not the best one.

In order to configure a Service Account for each pod, obeying the principle of least privilege, you may follow this procedure:

Create the Service Account, configure the Necessary Permissions and create a Service Account Key

Store the Service Account Key, supplied in a service-account.json file, in a Kubernetes Secret

Access the Service Account key using the GOOGLE_APPLICATION_CREDENTIALS

environment variable to point at the json file inside the secret volume.

Kubernetes secret objects let you store and manage sensitive information, such as passwords, OAuth tokens, and ssh keys. Putting this information in a secret is safer and more flexible than putting it verbatim in a Pod definition or in a container image.

A **Kubernetes volume** is just a directory, possibly with some data in it, which is accessible to the Containers in a Pod.



For any further detail:

<https://cloud.google.com/blog/products/gcp/help-keep-your-google-cloud-service-account-keys-safe>

<https://cloud.google.com/iam/docs/creating-managing-service-account-keys>

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Question 4

Unattempted

Domain : Other

You have discovered a small but not blocking error in your application deployed on GCP Compute Engine.

The source code is stored in github.

Which tool can you use in order to discover and solve the error occurring in the production service without slowing down or interrupting the service?

- A. Use Stackdriver Trace
- B. Use Stackdriver Debugger

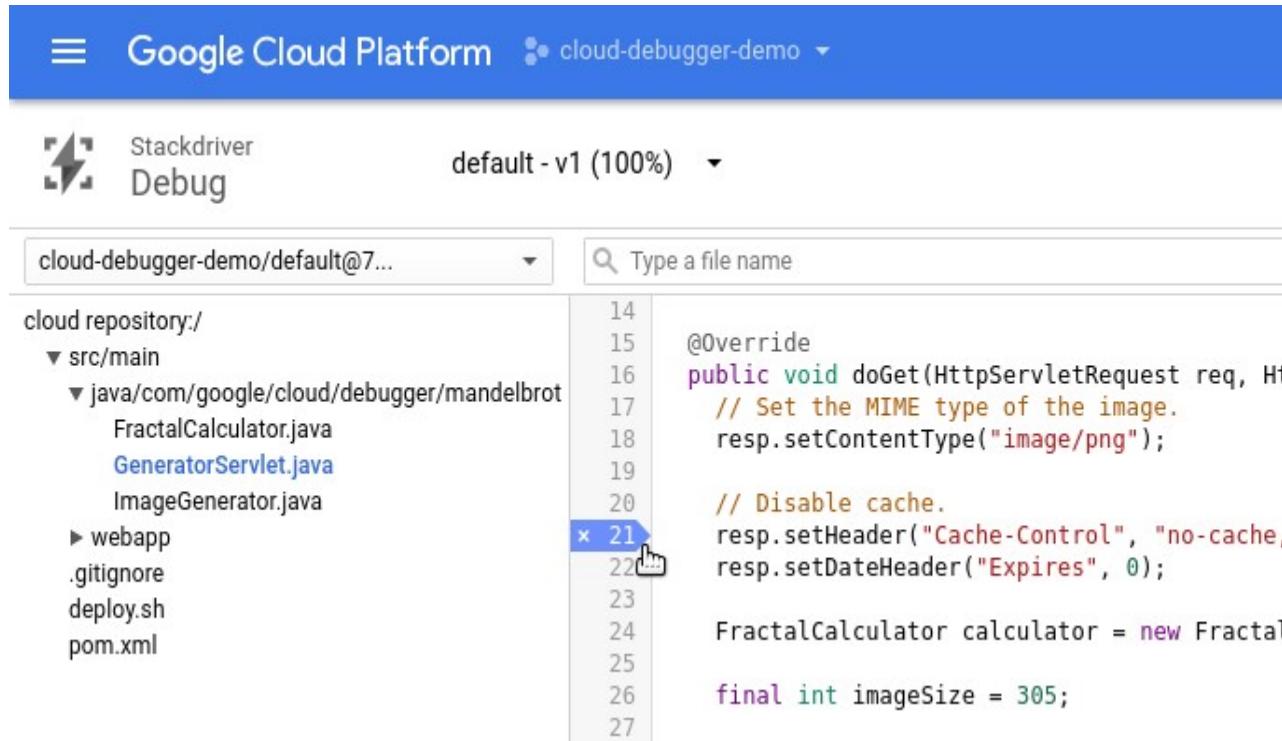
- C. Use the debugger of your development environment, connected with the source code in your local machine
- D. Use Stackdriver Application Monitoring
- E. Use **Cloud Code** comes with tools to help you write, deploy, and debug cloud-native applications quickly and easily

Explanation:

Correct Answer B

Stackdriver Debugger is a feature of Google Cloud Platform that lets you inspect the state of a running application in real time, without stopping or slowing it down. Your users are not impacted while you capture the call stack and variables at any location in your source code.

Stackdriver Debugger is easier to use when source code is available. It knows how to display the correct version of the source code when a version control system is used, such as Google Cloud Source Repositories, GitHub, Bitbucket, or GitLab.



The screenshot shows the Google Cloud Platform Stackdriver Debugger interface. At the top, there's a blue header bar with the Google Cloud logo and the project name "cloud-debugger-demo". Below the header, the title "Stackdriver Debug" is displayed next to a lightning bolt icon. To the right, a dropdown menu shows "default - v1 (100%)". The main area has two sections: a left sidebar showing the file structure of "cloud-debugger-demo/default@7..." and a right pane showing the Java code for "FractalCalculator.java". The sidebar lists files like "FractalCalculator.java", "GeneratorServlet.java", and "ImageGenerator.java". The right pane shows the code with line numbers 14 through 27. A cursor is hovering over line 21, which contains the code "resp.setHeader("Cache-Control", "no-cache, no-store, must-revalidate");". The code uses color coding for keywords and comments.

```
cloud repository:/  
  ▼ src/main  
    ▼ java/com/google/cloud/debugger/mandelbrot  
      FractalCalculator.java  
      GeneratorServlet.java  
      ImageGenerator.java  
    ▶ webapp  
    .gitignore  
    deploy.sh  
    pom.xml  
  
14  
15 @Override  
16 public void doGet(HttpServletRequest req, HttpServletResponse resp) throws IOException {  
17     // Set the MIME type of the image.  
18     resp.setContentType("image/png");  
19  
20     // Disable cache.  
21     resp.setHeader("Cache-Control", "no-cache, no-store, must-revalidate");  
22     resp.setDateHeader("Expires", 0);  
23  
24     FractalCalculator calculator = new FractalCalculator();  
25  
26     final int imageSize = 305;  
27 }
```

A is wrong because **Stackdriver Trace** is a performance analyzer that collects latency data from your applications and displays it in the Google Cloud Platform Console. You can track how requests propagate through your application and receive detailed near real-time performance insights.

C is wrong because it was required to debug the app in production.

D is wrong because Cloud Code provides IDE support for the full development cycle of Kubernetes applications, from creating a cluster for development and testing to deploying

your finished application. Cloud Code also supports you along the way with deploy-ready samples, out-of-the-box configuration snippets, and a tailored debugging experience.

For any further detail:

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

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

https://cloud.google.com/debugger/docs/using/snapshots#take_a_debug_snapshot

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Question 5

Unattempted

Domain : Other

Which are the GCP tools for SRE: Site Reliability Engineering?

- A. **SRE is the management of availability, latency, performance, efficiency, change management, monitoring, emergency response, and capacity planning regarding the software development process. GCP has a set of tools called APPLICATION PERFORMANCE MANAGEMENT: Stackdriver Trace, Stackdriver Debugger, and Stackdriver Profiler** 
- B. **SRE is the management of security, performance, scale, and reliability of Google's technology Services. Google's application and network architecture is designed for maximum reliability and uptime. GCP provides: SLAs, Privacy Policies and tools for Data Protection Google's application and network architecture is designed for maximum reliability and uptime.**
- C. **SRE is the management of security, latency, performance, emergency response, and capacity planning regarding the network and the infrastructure. GCP has the following set of products: VPC, Interconnect, VPN and Peering**
- D. **SRE is the Protection and Mitigation against DDoS management and other threats; GCP has a set of protections and guidelines for the best practices to be followed**

Explanation:

Correct Answer A

A Site Reliability Engineering team is responsible for availability, latency, performance,

efficiency, change management, monitoring, emergency response, and capacity planning.



SRE implements DevOps

Stackdriver Trace is a performance analyzer that collects latency data from your applications and displays it in the Google Cloud Platform Console. You can track how requests propagate through your application and receive detailed near real-time performance insights.

Stackdriver Profiler is a statistical, low-overhead profiler that continuously gathers CPU usage and memory-allocation information from your production applications.

Stackdriver Debugger is a feature of Google Cloud Platform that lets you inspect the state of a running application in real time, without stopping or slowing it down. Your users are not impacted while you capture the call stack and variables at any location in your source code.

For any further detail:

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

Stackdriver Trace, Stackdriver Debugger, Stackdriver Profiler

<https://cloud.google.com/files/GCPDDoSprotection-04122016.pdf>

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Question 6

Unattempted

Domain : Other

Your company needs to keep under control a set of critical applications deployed in App Engine.

In particular, it wants to:

register, archive and analyze all the activities

activate corrective actions whenever there are errors.

Your application code outputs its log information to stdout.

Which of the following solutions is the optimal one?

- A. Copy the Compute Engine VM Instances stdout logs in Cloud Storage and create a Cloud Function for the processing
- B. Install Stackdriver Logging Agent and create a procedure aimed at the copy and processing of data
- C. Export Stackdriver logs creating a sink with destination Cloud Storage
- D. Export Stackdriver logs creating 2 sinks: BigQuery and Pub/Sub 

Explanation:

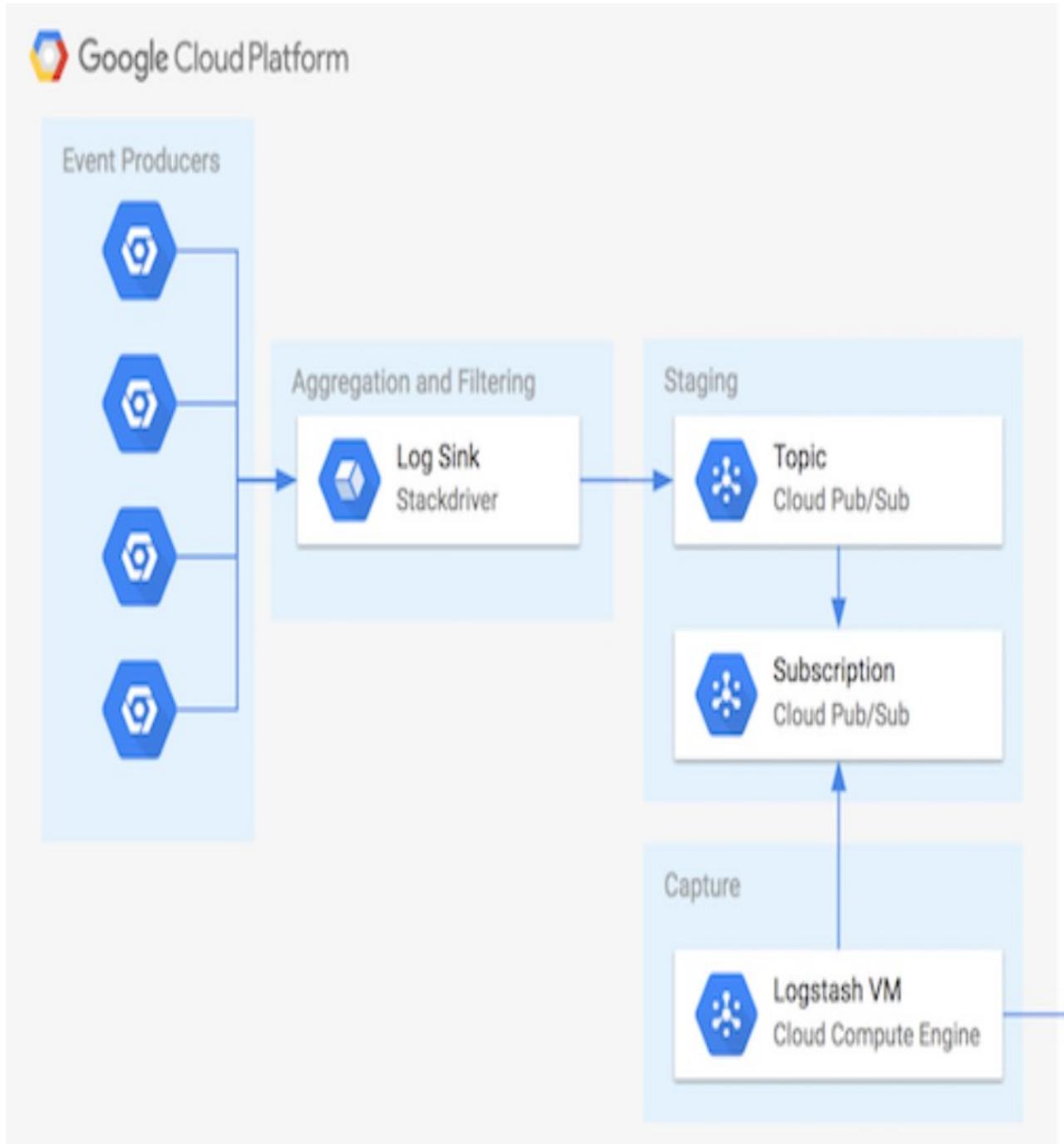
Correct Answer D

There is no need to get stdout logs and VM infrastructure, because you are using a PaaS Platform, that is Serverless.

You just need to export logs by creating one or more sinks that include a logs query and an export destination. As Stackdriver Logging receives new log entries, they are compared against each sink. If a log entry matches a sink's query, then a copy of the log entry is written to the export destination.

So, you can insert meaningful logs in Bigquery and you get data, text, metadata and timing info. All this data is available for further statistical analysis.

Then you can create a query that selects all the error message and the queue to the correct procedure that performs actions for correction and alerting.



For any further detail:

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

https://cloud.google.com/logging/docs/export/configure_export_v2

<https://cloud.google.com/logging/docs/export/bigquery>

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Question 7**Unattempted**

Domain : Other

The field agents of your company have to send via mobile devices CSV files containing orders and data concerning their activity.

The various files have as destination a set of Cloud Storage buckets.

You management asked you to create a system that loads these data into Bigquery in real-time, in a quick and affordable way.

The target tables are already structured for the purpose.

Which of the following is the best method?

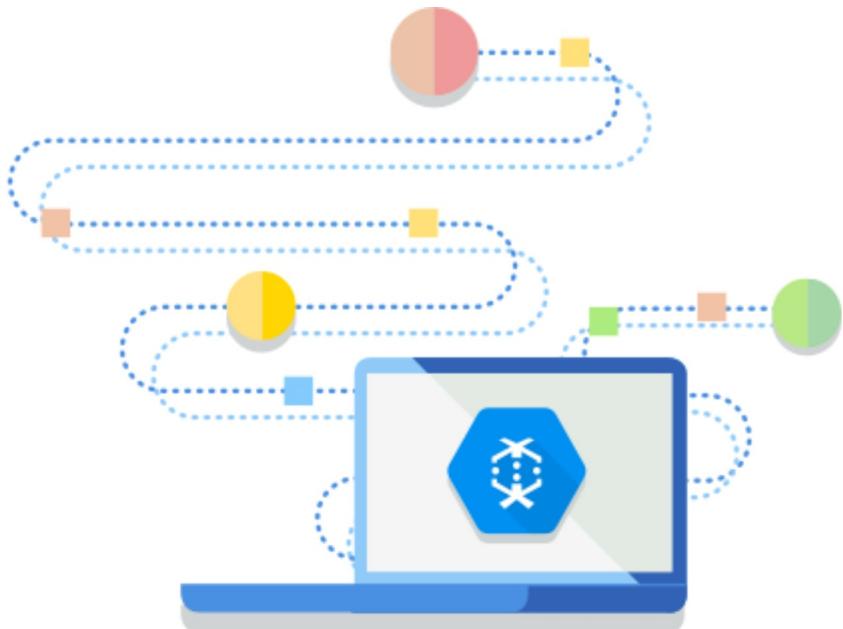
- A. Schedule a cloud function that moves files into a work bucket, process CSVs and, at the end, archive the processed files. All using the Cloud Storage lifecycle.
- B. Use The Cloud Storage Text to BigQuery (Stream) pipeline that allows to stream text files stored in Cloud Storage, transform them using JavaScript into User Defined Function (UDF) that you provide, and output the result to BigQuery 
- C. Write a Cloud Function to react to CSV file upload to Cloud Storage, read content and use it to update to Google Sheet using the Sheets API.
- D. Use Google Cloud Storage Triggers to activate a Cloud Function Trigger that perform the data Transfer

Explanation:

Correct Answer B

This pipeline is a ready and optimized procedure that reliably can manage and execute all the process.

So there is nothing to code, test and debug apart a very little and standard User Defined Function in order to comply with the structure of your tables.



The other solutions are far more complicated.

Option C perform actions that are not required, that is update to Google Sheet.

For any further detail:

<https://cloud.google.com/blog/products/storage-data-transfer/streaming-data-from-cloud-storage-into-bigquery-using-cloud-functions>

<https://cloud.google.com/functions/docs/calling/storage>

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Question 8

Unattempted

Domain : Other

As a Developer you have tested the features of your interest of GCP, Firebase and GSuite. You are now required to organize a development project and design the rules for security. Which of these directives is the most correct to manage Team members in a coordinated and secure manner?

- A. Use GSuite or Gmail user accounts
- B. Use Cloud Identity

C. Use Cloud Audit

D. Use Cloud Firewall

Explanation:

Correct Answer B

Google Cloud uses Google accounts for authentication and access management. Your developers and other technical staff must have Google accounts to access Google Cloud. Google recommends using fully managed Google accounts tied to your corporate domain name through Cloud Identity. This way, the developers can access Google Cloud using their corporate email IDs, and your admins can see and control the accounts through the Admin Console.

Cloud Identity is a unified identity, access, app, and endpoint management (IAM/EMM) platform that helps IT and security teams maximize end-user efficiency, protect company data, and transition to a digital workspace.



For any further detail:

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

organizations#manage-identities

<https://cloud.google.com/identity/solutions/enable-sso>

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Question 9

Unattempted

Domain : Other

You are using some GCP services from an external, on-premises network and a VPC from another Cloud vendor.

Which of these methods can you use to securely manage the authorization to access these services?

Choose 3 answers.

- A. Use Service Account Keys, store them in a secure location, rotate them periodically and call the services using OAuth 2.0 
- B. Prepare an API using Apigee and whitelist the IP range of the calling subnet calling the services. Use Service Accounts and GCP-managed keys. 
- C. Use Service Account Keys and store them in the Source Repository that you are using
- D. Create a VPN tunnel between GCP and the external network and use GCP-managed keys 
- E. Use JWT Tokens

Explanation:

Correct Answer A, B, D

The procedure in the A option is fully described the following article, that gives a full explanation of how to secure server-to-server activities with the OAuth 2.0 standard.

<https://developers.google.com/identity/protocols/OAuth2ServiceAccount>



Using an API management (option B) helps to secure server-to-server calls; GCP has Cloud Endpoint and Apigee for API management; Apigee has a richer set of security functions.

Using a VPN tunnels create a secure path between 2 different environments, either on-premises and multi-cloud.

C is wrong because it is a security breach to store keys in the cose.

D is wrong because the use of signed JWT Token is allowed only with some Google APIs, not all of them, so it will not address our issue.

For any further detail:

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

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

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Question 10

Unattempted

Domain : Other

You have been asked to design an app that allows to upload images and documents to Cloud Storage. These files must be processed, classified and have to remain available for a month. Then they must be archived.

You want to create a simple and functional solution.

Which of the following is the best one?

- A. Use Google Cloud Storage Triggers and call a function that executes all the task requested

- B. Use Google Cloud Storage Triggers and call a function that classifies files; configure the bucket with a lifecycle rule that changes the storage classes of Objects to Coldline Storage ✓
- C. Create a Linux Cron Job in a VM that executes all the task requested
- D. Use Cloud Scheduler and setup an Appengine app

Explanation:

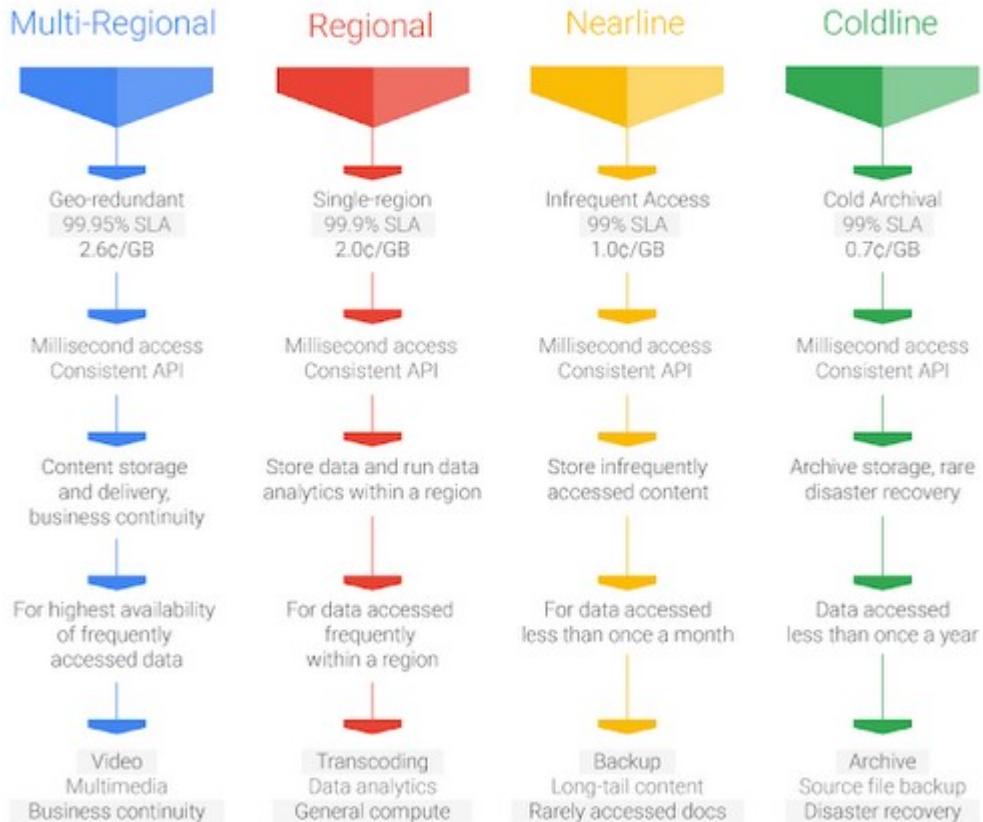
Correct Answer B

The best way to archive Storage Objects after a period of time is to use Cloud Storage Object Lifecycle Management.

Everything is automated and done by GCP.

With Storage Triggers you can activate your function on any new file loaded.

Google Cloud Storage Classes



A is wrong because a Cloud Function for a batch job (archiving) is useless and not advisable because it is prone to timeout.

C and D are complex and/or expensive: no need of schedulers when automatic triggers are available. In addition an Appengine app is more expensive than a function and is suitable for complete applications and not single functions.

For any further detail:

<https://cloud.google.com/functions/docs/calling/storage>

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

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

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Question 11

Unattempted

Domain : Other

Your company is migrating its systems to GCP.

There is a critical application that must be used only by an identified user group, internal or external to the company

The application was used locally and used to have no type of authentication. You have been asked, if possible, not to update the code in order to accomplish this task.

Which is the fastest, cheapest and most elegant solution?

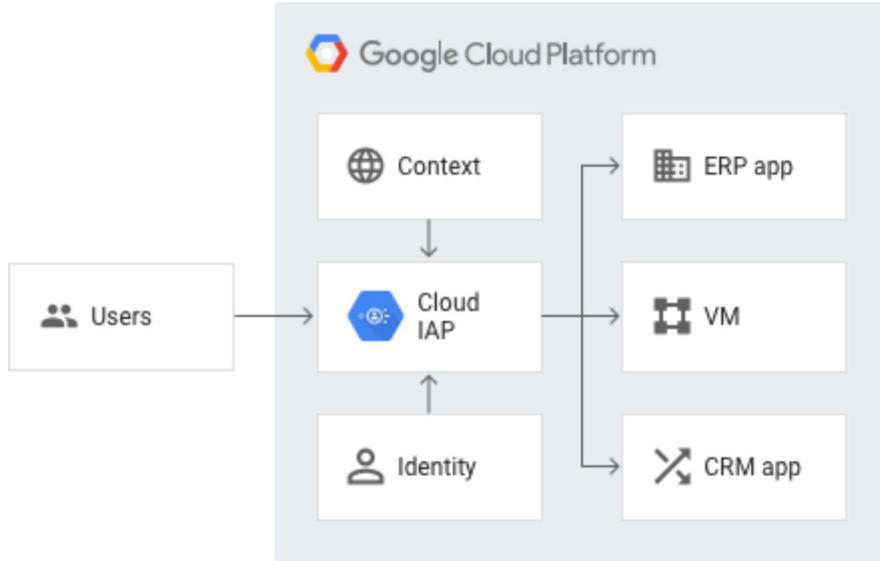
- A. Create a small login app with App Engine using its native features that allow you to manage user access
- B. Create a small login app with Firebase using its native features that allow you to manage user access
- C. Use Cloud Endpoints
- D. Use Cloud IAP 
- E. Use Apigee

Explanation:

Correct Answer D

Cloud IAP is a product aimed at exactly this kind of problems, without any need to change applications.

Cloud IAP is used when you want to enforce access control policies for applications and resources. Cloud IAP works with signed headers or the App Engine standard environment Users API to secure your app. With Cloud IAP, you can set up group-based application access: a resource could be accessible for employees and inaccessible for contractors, or only accessible to a specific department.



For any further detail:

<https://cloud.google.com/appengine/docs/standard/python/oauth/>

<https://firebase.google.com/docs/auth>

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

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Question 12

Unattempted

Domain : Other

You have an application that examines the written requests of a Customer Care in order to prepare examples of ready-made answers in the operator assistance system.

The problem is that sometimes within the dialogues confidential information is transcribed that should not be disclosed.

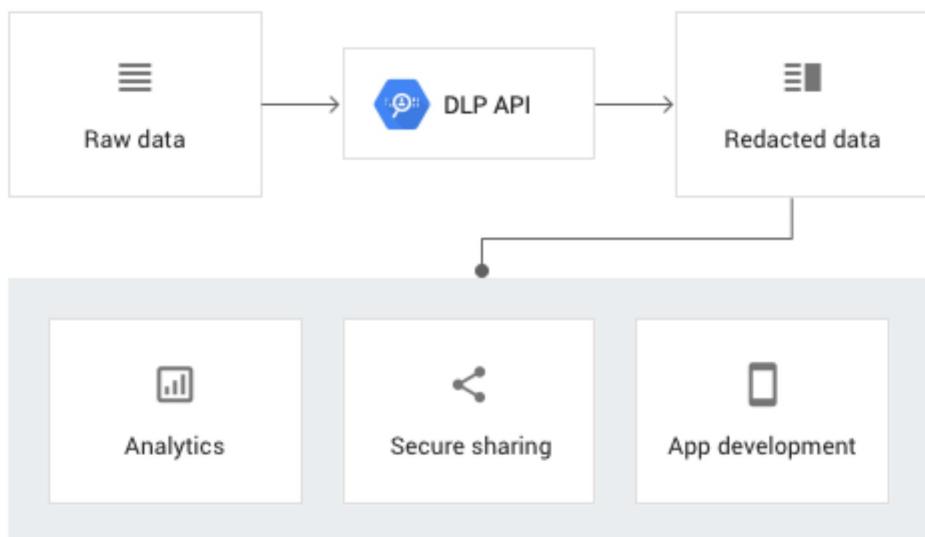
What is the most easy and immediate GCP technique to adopt in the program that processes these texts?

- A. Use Cloud Data Loss Prevention ✓
- B. Use Dialogflow
- C. Create a Python app with a list of the sensitive data/words to be detected
- D. Use Cloud Natural Language API

Explanation:

Correct Answer A

Cloud Data Loss Prevention (DLP) is the perfect and ready to use solution; it uses information types—or infoTypes—to define what it scans for. An infoType is a type of sensitive data, such as name, email address, telephone number, identification number, or credit card number.



Every infoType defined in Cloud DLP has a corresponding detector. Cloud DLP uses infoType detectors in the configuration for its scans to determine what to inspect for and how to transform findings. InfoType names are also used when displaying or reporting scan results.

There are a large set of pre-ready infoTypes but it is possible to develop and create Custom infoType detectors.

B is wrong because Dialogflow is an end-to-end, build-once deploy-everywhere development suite for creating conversational interfaces for websites, mobile applications, popular messaging platforms, and IoT devices. You can use it to build interfaces (such as chatbots and conversational IVR) that enable natural and rich interactions between your users and your business. Dialogflow Enterprise Edition users have access to Google Cloud Support and a service level agreement (SLA) for production deployments.

C is wrong because it is a long, error prone and difficult to maintain solution.

D is wrong because the Cloud Natural Language API provides natural language understanding

technologies to developers, including sentiment analysis, entity analysis, entity sentiment analysis, content classification, and syntax analysis. This API is part of the larger Cloud Machine Learning API family.

It is not directly aimed at sensitive data detection.

For any further detail:

<https://cloud.google.com/dlp/docs/infotypes-reference>

<https://cloud.google.com/natural-language/docs/>

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Question 13

Unattempted

Domain : Other

Your company is developing a technical assistance service that is aimed to rank the highest quality on the market.

For this purpose the dialogues with the operator need to be transcribed in natural language and there will be an artificial intelligence system that will identify the service and the people able to take charge of the problem.

Which GCP services do you think is the most suitable for this system (choose two)?

- A. AutoML Natural Language Classification 
- B. Tensorflow
- C. Dialogflow
- D. Document Understanding AI 

Explanation:

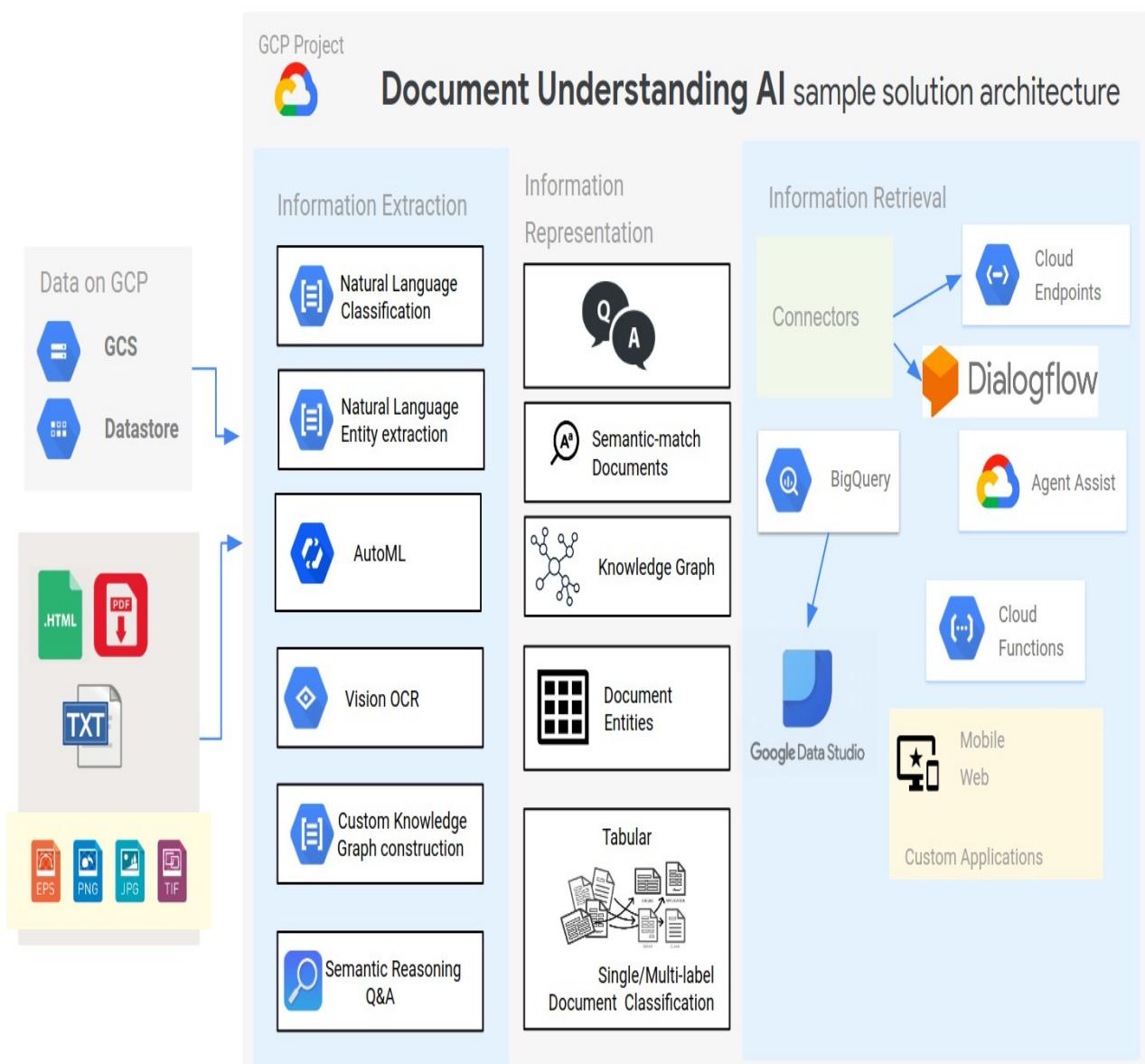
Correct Answer A, D

The system must process transcripts and therefore documents that have to be classified in a personalized way.

AutoML Natural Language enables to create custom machine learning models to classify English-language content into a custom set of categories.

Custom machine learning models for classifying content are useful when the pre-defined categories that are available from the Natural Language API are too generic or not applicable to your specific use case or knowledge domain.

Document Understanding AI to classify documents, extract crucial information from scanned images, and apply industry-specific, custom analysis to automate your processing needs.



Contact Center AI solutions combine the best of Google AI with popular contact center software, improving customer experience as well as operational efficiency. The result? More personalized, intuitive customer care from the first "Hello."

B is wrong because Tensorflow is an end-to-end open source platform for machine learning.

You can build with it many ML models but you need specialized experts to do that. It is not a ready to use product aimed at personalized document classification.

It has a comprehensive, flexible ecosystem of tools, libraries and community resources that lets researchers push the state-of-the-art in ML and developers easily build and deploy ML powered applications.

GCP AI Platform supports Kubeflow, Google's open-source platform, which lets you build portable ML pipelines that you can run on-premises or on Google Cloud without significant code changes. And you'll have access to cutting-edge Google AI technology like TensorFlow, TPUs, and TFX tools as you deploy your AI applications to production.

C is wrong because Dialogflow is an end-to-end, build-once deploy-everywhere development suite for creating conversational interfaces for websites, mobile applications, popular messaging platforms, and IoT devices. You can use it to build interfaces (such as chatbots and conversational IVR) that enable natural and rich interactions between your users and your business. Dialogflow Enterprise Edition users have access to Google Cloud Support and a service level agreement (SLA) for production deployments.

For any further detail:

<https://cloud.google.com/dialogflow/docs/basics>

<https://cloud.google.com/natural-language/>

<https://cloud.google.com/natural-language/#how-automl-natural-language-works>

<https://cloud.google.com/document-understanding/docs/>

<https://www.tensorflow.org/federated>

<https://cloud.google.com/ml-engine/docs/tensorflow/getting-started-training-prediction>

<https://cloud.google.com/solutions/contact-center/>

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Question 14

Unattempted

Domain : Other

A large bank has migrated most of the applications to the GCP cloud. Now he has the problem of replacing the database on the Mainframe with a Cloud solution that provides the same levels of reliability and transactional security.

In addition to this, it wants to provide an integrated system all over the world and therefore let interact the different regional instances.

Which is the best solution to adopt?

A. **Cloud SQL Ingres**

B. **Cloud BigTable**

C. Cloud Spanner 

D. Cloud SQL Server

Explanation:

Correct Answer C

Cloud Spanner is the first scalable, enterprise-grade, globally-distributed, and strongly consistent database service built for the cloud specifically to combine the benefits of relational database structure with non-relational horizontal scale. This combination delivers high-performance transactions and strong consistency across rows, regions, and continents with an industry-leading 99.999% availability SLA, no planned downtime, and enterprise-grade security. Cloud Spanner revolutionizes database administration and management and makes application development more efficient.

Cloud SQL for PostgreSQL scale up to 64 processor cores and more than 400 GB of RAM and will automatically scale storage. It is powerful, but regional.

The HA configuration, sometimes called a cluster, provides data redundancy. A Cloud SQL instance configured for HA is also called a regional instance and is located in a primary and secondary zone within the configured region. Within a regional instance, the configuration is made up of a primary instance (master) and a standby instance. Through synchronous replication to each zone's persistent disk, all writes made to the primary instance are also made to the standby instance. In the event of an instance or zone failure, this configuration reduces downtime, and your data continues to be available to client applications.

Cloud Bigtable is a noSQL DB: a sparsely populated table that can scale to billions of rows and thousands of columns, enabling you to store terabytes or even petabytes of data. A single value in each row is indexed; this value is known as the row key. Cloud Bigtable is ideal for storing very large amounts of single-keyed data with very low latency. It supports high read and write throughput at low latency, and it is an ideal data source for MapReduce operations.

Very powerful, but not suitable for financial transactional applications.

Also SQL Server is regional and not global.

For Cloud SQL Services there are different location types, never global:

A regional location is a specific geographic place, such as London.

A multi-regional location is a large geographic area, such as the United States, that contains at least two geographic places. Multi-regional locations are only used for backups.

For any further detail:

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

<https://cloud.google.com/sql/docs/postgres/high-availability>

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

<https://cloud.google.com/sql/docs/sqlserver/>

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Question 15

Unattempted

Domain : Other

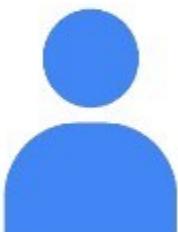
What is the difference between Primitive and Predefined roles?

- A. Primitive roles are identities with specific permissions, grouped by service; Predefined roles are identities with a broader scope
- B. Predefined roles are identities with specific permissions, grouped by service; Primitive roles are identities with a broader scope 
- C. Both Primitive and Predefined provide a granular access according to a user-specified list of permissions
- D. Predefined roles include Owner, Editor, and Viewer and Primitive roles are more granular

Explanation:

Correct Answer B

Identity and Access Management



Who

can do what

on which resource

Predefined roles, which provide granular access for a specific service, prevent unwanted access to other resources. and are managed by Google Cloud.

For example, **roles/appengine.appAdmin** has Read/Write/Modify access to all application configuration and settings and includes a set of specific permissions, like : appengine.instances.* , appengine.operations.* , appengine.runtimes.* , appengine.services.* and so on.

Primitive roles were used prior to IAM. There are three primitive roles: owner, editor, and viewer. Viewers have permission to perform read-only operations. Editors have viewer permissions and permission to modify an entity. Owners have editor permissions and can manage roles and permission on an entity. Owners can also set up billing for a project.

IAM roles are collections of permissions. They are tailored to provide identities with just the permissions they need to perform a task and no more. To see a list of users assigned a role, click the Roles tab in the

There are also **Custom roles** that provide a granular access according to a user-specified list of permissions, so answer C is wrong.

For any further detail:

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

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Question 16**Unattempted**

Domain : Other

What is the difference between Least Privilege and Separation of Duties and What is their meaning?

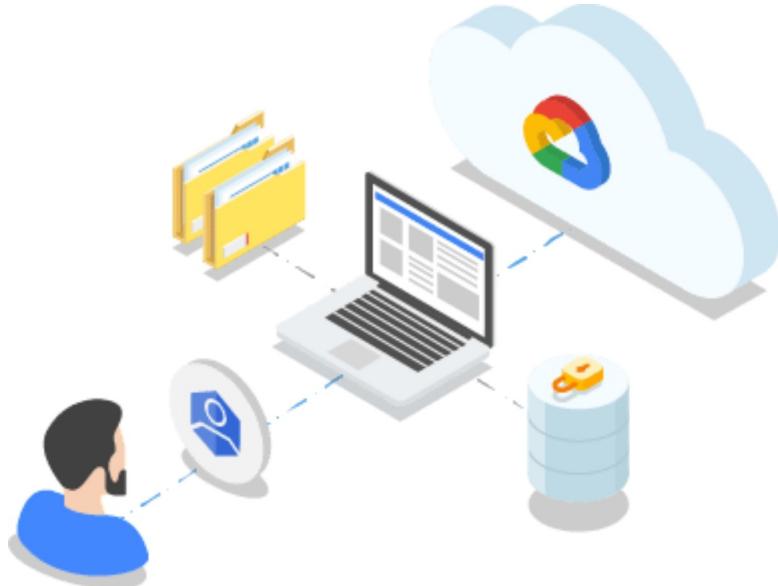
- A. Least Privilege means that risky operation have to be carried on by multiple people. Separation of duties dictates that any user should access separated task and resources.
- B. Least Privilege dictates that any user, account, and computing process may access only those resources absolutely required to perform their work. Separation of duties is the concept of requiring that risky operation have to be carried on by multiple people. 
- C. Least Privilege means that users should not have enough privileges.
- C. Separation of Duties means that any operation must be performed by two accounts, at least.
- D. Least Privilege is supported by primitive roles. Separation of Duties is supported by predefined roles.

Explanation:

Correct Answer B

The principle of least privilege means users will be given access to the resources that are strictly necessary for a legitimate purpose.

With Primitive roles is not possible to comply with the principle of least privilege. It is necessary to use predefined roles.



Separation of duties requires that any critical task should need more than one person to complete it.

Also here, you have to use predefined or custom roles.

For any further detail:

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

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Question 17

Unattempted

Domain : Other

What is a columnar Database and which is the GCP Solution?

- A. A SQL Database organized in columns instead of rows. Cloud SQL may act as a columnar Database
- B. A noSQL Database: Cloud Datastore
- C. A BigData Solution: Cloud Dataprep
- D. A noSQL Database: Cloud BigTable

Explanation:

Correct Answer D

Bigtable is a NoSQL wide-columnar database.

Wide-column and petabyte-scale database store tables that can have a large and variable number of columns, that may be grouped in families.



Cloud Bigtable is a sparsely populated table with 3 dimensions (row, column, time) that can scale to billions of rows and thousands of columns, enabling you to store terabytes or even petabytes of data and to access data at sub-millisecond latencies. A single value in each row is indexed; this value is known as the row key. Cloud Bigtable is ideal for storing very large amounts of single-keyed data with very low latency. It supports high read and write throughput at low latency, and it is an ideal data source for MapReduce operations.

Each row is indexed by a single row key, and columns that are related to one another are typically grouped together into a column family. Each column is identified by a combination of the column family and a column qualifier, which is a unique name within the column family.

Each row/column intersection can contain multiple cells, or versions, at different timestamps, providing a record of how the stored data has been altered over time. Cloud Bigtable tables are sparse; if a cell does not contain any data, it does not take up any space.

Cloud Bigtable scales in **direct proportion** to the number of machines in your cluster without any bottleneck.

A is wrong because a SQL may not act as a columnar Database, that cannot have joins, secondary indexes and multiple tables.

B is wrong because Cloud Datastore is a document Database, not a columnar Database.

C is wrong because Cloud Dataprep is a completely different product: a data service for visually exploring, cleaning, and preparing structured and unstructured data for analysis, reporting, and machine learning.

For any further detail:

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

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

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Question 18**Unattempted**

Domain : Other

Your current task is the migration of a Rest NodeJs API in the GCP Cloud.

You have been asked to use Serverless solutions and to make the Sessionless System, while continuing to manage user session information.

How can you realize all that? Choose three options.

- A. Use JWT tokens 
- B. Use App Engine Standard Edition
- C. Use App Engine Flexible Edition
- D. Use Cloud Functions and Cloud Memorystore 
- E. Use Cloud Functions and Cloud Datastore 

Explanation:

Correct Answers A, D, E

JWT tokens is an open standard (RFC 7519) that defines a compact and self-contained way for securely transmitting information between parties as a JSON object. Signed tokens can verify the integrity of the claims contained within it, while encrypted tokens hide those claims from other parties.

You can use JWT for Authorization and Information Exchange of any info, like user session data.

Cloud Memorystore for Redis provides a fully managed in-memory data store service built on scalable, secure, and highly available infrastructure managed by Google. Use Cloud Memorystore to build application caches that provides sub-millisecond data access. Cloud Memorystore is compatible with the Redis protocol, allowing easy migration with zero code changes.

So, session data can be retrieved in memory without any need to maintain the same process for the dialog with the user.

The same goal can be achieved with **Cloud Datastore**, the noSQL Document Database. Less

Performance but less expensive.

Options B and C are wrong because using App Engine doesn't change the Session Management.

For any further detail:

<https://jwt.io/introduction/>

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

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

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Question 19

Unattempted

Domain : Other

It is necessary to migrate in Cloud GCP a REST API developed with Java 7, which currently works on-premises.

The system may be subject to strong demand peaks and must always be available and have good performances. Furthermore, it is necessary to minimize costs.

The system must be organized to be scalable and avoid any SPF: Single Point of Failures.

Which of these solutions is the best for Application Server?

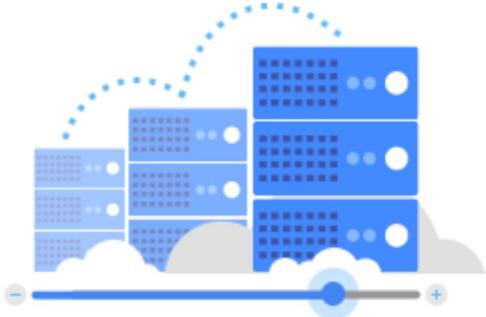
How do you integrate the calculation procedure?

- A. Use a Managed instance groups
- B. Load Balancer
- C. Use GKE 
- D. App Engine Standard

Explanation:

Correct Answer C

Google Kubernetes Engine (GKE) is a managed, production-ready environment for deploying containerized applications.



Kubernetes provides: automatic management, monitoring and liveness probes for application containers, automatic scaling, rolling updates.

Managed instance groups (MIGs) let you operate apps on multiple identical VMs. You can make your workloads scalable and highly available by taking advantage of automated MIG services, including: autoscaling, autohealing, regional (multiple zone) deployment, and automatic updating.

Managed instance groups need load balancing services to distribute traffic across all of the instances in the group.

A and B are not correct because are both needed for a scalable and ha (high availability) solution and it is more resource intensive than a managed Kubernetes solution with GKE.

D is wrong because App Engine Standard Environment is a PaaS that hosts and scales application in a secure, sandboxed environment with standard technologies and versions and Java 7 is not supported., allowing the App Engine standard environment to distribute requests across multiple servers, and scaling servers to meet traffic demands. Your application runs within its own secure, reliable environment that is independent of the hardware, operating system, or physical location of the server.

For any further detail:

<https://cloud.google.com/kubernetes-engine/>

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

<https://cloud.google.com/appengine/docs/standard/>

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Question 20

Unattempted

Domain : Other

It is necessary to migrate in Cloud GCP a REST API developed with Java 7 and mySQL, which currently works on-premises.

The system may be subject to strong demand peaks and must always be available and have good performances. Furthermore, it is necessary to minimize costs.

The system must be organized to be scalable and avoid any SPF: Single Point of Failures.

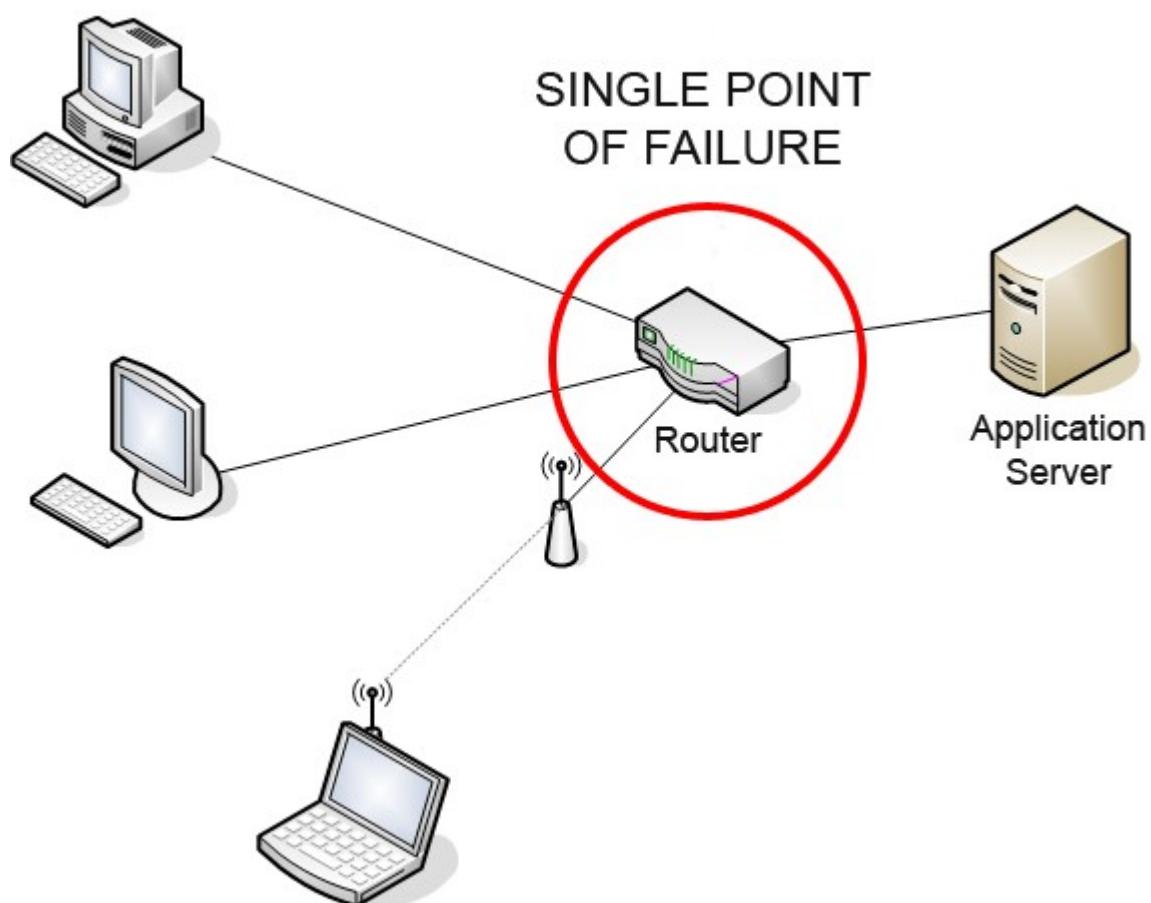
Which of these solutions can be adopted for the database server?

- A. Use GKE
- B. Use a Managed Cloud SQL service
- C. Create and manage a Replica of the muSQL DB
- D. Create daily DB Snapshots
- E. Use a noSql Database

Explanation:

Correct Answers B, C

In order to avoid any SPF: Single Point of Failures, you have to use a managed Database Service or manage a Replica.



Cloud SQL is a managed mySQL Service that handles High Availability and Failover out of the box.

The alternative solution is to create transactional or merge db replicas.

A transactional replica keep in synch Databases at transaction level.

A merge replica keep in synch Databases at checkpoint times.

For any further detail:

<https://cloud.google.com/sql/docs/mysql/>

https://en.wikipedia.org/wiki/Distributed_database

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Question 21

Unattempted

Domain : Other

Which are the similarities and differences between a Kubernetes Cluster and an Instance Group? Choose three correct statements among the following ones:

- Both are sets of VMs that can be managed as a group. Managed instance groups (MIGs) work on identical VMs. Kubernetes Cluster may have multiples node pools with different machine types.** 
- B. Managed instance groups start and stop faster and use fewer resources than Kubernetes Cluster.**
- C. Kubernetes Pods may reside on different nodes (VM) while managed instance groups execute the same application on each of the nodes.** 
- D. Both Managed instance groups and Kubernetes Cluster natively manage applications in containers**
- E. Kubernetes Clusters have more automation features** 
- F. With Kubernetes Cluster it is necessary to have a Load Balancer to serve traffic as backend service or target pool**

Explanation:

Correct Answers: A, C, E



kubernetes

Both Kubernetes Clusters and Instance Groups are sets of VMs that can be managed as a group. Instance groups, however, are much more restricted

All VMs generally run the same image in an instance group. That is not the case with Kubernetes. Also, instance groups have no mechanism to support the deployment of containers

They can start and stop much faster (usually in seconds) and use fewer resources

Instance groups have some monitoring and restart instances that fail, but Kubernetes has much more flexibility with regard to maintaining a cluster of servers. Giusti

You may notice that pods are similar to Compute Engine managed instance groups. A key difference is that pods are for executing applications in containers and may be placed on various nodes in the cluster, while managed instance groups all execute the same application code on each of the nodes. Also, you typically manage instance groups yourself by executing commands in Cloud Console or through the command line. Pods are usually managed by a controller.

Services

Since pods are ephemeral and can be terminated by a controller, other services that depend on pods should not be tightly coupled to particular pods. For example, even though pods have unique IP addresses, applications should not depend on that IP address to reach an application. If the pod with that address is terminated and another is created, it may have another IP address. The IP address may be re-assigned to another pod running a different container.

Kubernetes provides a level of indirection between applications running in pods and other applications that call them: it is called a service. A service, in Kubernetes terminology, is an object that provides API endpoints with a stable IP address that allow applications to discover pods running a particular application. Services update when changes are made to pods, so they maintain an up-to-date list of pods running an application.

For any further detail:

<https://cloud.google.com/kubernetes-engine/docs/concepts/kubernetes-engine->

overview

<https://cloud.google.com/kubernetes-engine/docs/concepts/node-pools>

<https://cloud.google.com/compute/docs/instance-groups/adding-an-instance-group-to-a-load-balancer>

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Question 22

Unattempted

Domain : Other

You are going to deploy a set of applications in GKE.

Which of the following choices do you need to make to be sure that the application will not have Single Point of failures of any kind and will be scalable?

Choose 2 options among the following ones?

- A. Create a cluster with a default-pool with cluster autoscaler 
- B. Create a single-zone cluster
- C. Create a cluster with a default-pool with a default configuration
- D. Create a regional cluster 

Explanation:

Correct Answer A, D

In order to avoid Single Point of failures of any kind, you have to have

workers nodes with auto-healing and auto-scaling

Option A

a backup master node (regional cluster).

Option D

Nodes execute the workloads run on the cluster. Nodes are VMs that run containers configured to run an application. Nodes are primarily controlled by the cluster master, but some commands can be run manually. The nodes run an agent called kubelet, which is the service that communicates with the cluster master.

A single-zone cluster has a single control plane (master) running in one zone. This control plane manages workloads on nodes running in the same zone.

Multi-zonal clusters

A multi-zonal cluster has a single replica of the control plane running in a single zone, and has nodes running in multiple zones. During an upgrade of the cluster or an outage of the zone where the control plane runs, workloads still run. However, the cluster, its nodes, and its workloads cannot be configured until the control plane is available. Multi-zonal clusters balance availability and cost for consistent workloads. If you want to maintain availability and the number of your nodes and node pools are changing frequently, consider using a regional cluster.

Regional clusters

A regional cluster has multiple replicas of the control plane, running in multiple zones within a given region. Nodes also run in each zone where a replica of the control plane runs. Because a regional cluster replicates the control plane and nodes, it consumes more Compute Engine resources than a similar single-zone or multi-zonal cluster.

For any further detail:

<https://cloud.google.com/kubernetes-engine/docs/concepts/cluster-autoscaler>

<https://cloud.google.com/kubernetes-engine/docs/concepts/types-of-clusters>

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Question 23

Unattempted

Domain : Other

How do you set up an application in GKE organized with multiple containers that need to talk to each other and whose functions must be called by an external API?

- A. Create a set of L7 Load Balancers to organize the traffic. Create a workload

- B. Organize containers in a single PODs. Create a Service. 
- C. Query Kubernetes to get the Pod IP address and setup the configuration accordingly. Use an Application Load Balancer
- D. Use gcloud to get the Pod IP address and setup the configuration accordingly. Use a Service

Explanation:

Correct Answer B

The only correct way is to use a Pod with multiple containers and create a Service, that is the equivalent of a Load Balancer with a static IP Address for Compute Engine.

Pods are the smallest objects in Kubernetes and they act as self-contained, isolated "logical hosts" that contain one or more containers (they communicate with localhost) and all the systemic needs of the application it serves:

Network: Pods are automatically assigned unique IP addresses. Storage: Pods can specify a set of shared storage volumes that can be shared among the containers.

You may configure one (default) or more node pools.

When you deploy Pods you can choose how to scale: a **Deployment** runs multiple replicas of your application and automatically replaces any instances that fail or become unresponsive.

Services group a set of Pod endpoints into a single resource. You get a stable cluster IP address that clients inside the cluster can use to contact Pods in the Service. A client sends a request to the stable IP address, and the request is routed to one of the Pods in the Service.

For any further detail:

<https://cloud.google.com/kubernetes-engine/docs/concepts/kubernetes-engine-overview>

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Question 24

Unattempted

Domain : Other

You are looking for a low-cost database service that supports strong consistency, atomic transaction and serializable isolation.

The data have to be partially structured.

What database and what configuration do you choose?

- A. Cloud SQL mySQL with default configuration
- B. Cloud SQL Postgres with default configuration
- C. Cloud Storage with lifecycle
- D. Cloud Datastore with transactional commits 

Explanation:

Correct Answer D

Cloud Datastore is a low cost noSQL Managed Database that is partially structured.



Datastore commits are either transactional, meaning they take place in the context of a transaction and the transaction's set of mutations are either all applied or none are applied, or non-transactional, meaning the set of mutations may not apply as all or none.

Consistency ensures that a user reading data from the database will get the same data no matter which server in a cluster responds to the request.

Datastore can be configured for strong consistency, but IO operations will take longer than if a less strict consistency configuration is used.

Datastore is a good option if your data is unstructured.

For any further detail:

https://cloud.google.com/datastore/docs/concepts/structuring_for_strong_consistency

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[View Queries](#)[open ▾](#)**Question 25****Unattempted**

Domain : Other

The following statement:

SELECT * FROM Clients WHERE __key__ HAS ANCESTOR KEY(ClientId, 'default')
in which language is written and for which DB?

- A. SQL for Cloud SQL
- B. JSON for MongoDB
- C. GQL for Cloud DataStore 
- D. HBase for Cloud Bigtable

Explanation:

Correct Answer C

GQL is clearly similar to SQL but the clause "HAS ANCESTOR KEY" is not part of standard SQL.
GQL is the query language of Cloud DataStore.

A is wrong because SQL hasn't the clause "HAS ANCESTOR KEY"

B is wrong because JSON is always enclosed in brackets

D is wrong because Hbase ia an API and not a declarative language. An example of HBase is:
table.get(new Get(Bytes.toBytes(ClientId)));

[Query by kind](#) [Query by GQL](#)**Namespace**[\[default\]](#) ▾1 `SELECT * FROM Task WHERE done=false`[Run query](#)[Clear query](#)[GQL query help](#) ↗

<input type="checkbox"/> Name/ID	created	description	done
<input type="checkbox"/> id=5730082031140864	2016-04-29 (12:58:00.000) PDT	Learn Google Cloud Datastore	false

For any further detail:<https://cloud.google.com/datastore/docs/concepts/queries><https://cloud.google.com/datastore/docs/concepts/queries#datastore-datastore-basic-query-gql>[Ask our Experts](#)Rate this Question?  [View Queries](#)

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Question 26**Unattempted**

Domain : Other

Which languages ??you can use with Cloud Spanner?

- A. Javascript, Json and GQL
- B. Java and GQL
- C. Python, Javascript and SQL
- D. Python, Javascript, GO, Java, PhP, Ruby and SQL 

Explanation:

Correct Answer D

Cloud Spanner is a scalable, enterprise-grade, globally-distributed, and strongly consistent relational built for the cloud that combines the benefits and consistency of traditional databases with non-relational horizontal scale.

Cloud Spanner uses the industry-standard ANSI 2011 SQL for queries and has client libraries for many programming languages.

Where do I store my stuff?

Object	In-memory	Non-relational	Relational	Warehouse		
 Cloud Storage Binary or object data Images, media serving, backups	 Cloud Memorystore (beta) Web/mobile applications, gaming Cache, game state, user sessions	 Cloud Datastore Hierarchical, mobile, web User profiles, Game State	 Cloud Bigtable Heavy read + write, events AdTech, financial, IoT	 Cloud SQL MySQL, PostgreSQL CMS, eCommerce	 Cloud Spanner RDBMS+scale, HA, global Transactions, Ad/Fin/MarTech	 BigQuery Enterprise Data Warehouse Analytics, Dashboards



For any further detail:

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

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Question 27

Unattempted

Domain : Other

Which kind of consistency is supported by Cloud Spanner?

- A. Eventual consistency
- B. External consistency 
- C. Strong consistency for queries against entity group
- D. Strong consistency within a partition

Explanation:

Correct Answer B

Cloud Spanner provides a special kind of consistency, called external consistency.

We are used to deal with strong consistency, that make possible that, after an update, all the queries will receive the same result.

In other words the state of the Database is always consistent, no matter the distribution of the processing, partitions and replicas.

The problem with a global, horizontal scalable DB as Spanner the transactions are executed in many distributed Instances and therefore, is really difficult to guarantee strong consistency.

Spanner manage to achieve all that by means of TrueTime, a distributed clock in all GCP computing systems. With TrueTime, Spanner manages the serialization of transactions, achieving in this way out external consistency, that is the strictest concurrency-control for Databases.

A is wrong because eventual consistency is far weaker and it is typically related to noSQL instances.

C is wrong because strong consistency for queries against entity group is supported by Cloud Datastore.

C is wrong because strong consistency within a partition doesn't exist.

For any further detail:

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

<https://cloud.google.com/spanner/docs/true-time-external-consistency>

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Question 28

Unattempted

Domain : Other

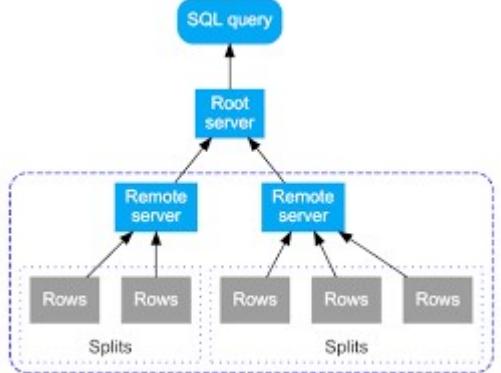
How can you find out the problem origin and tune a slow SQL Statement in Cloud SQL or Cloud Spanner?

- A. Using Stackdriver Debugger
- B. Using Stackdriver Profiler
- C. Adding Secondary Indexes
- D. Examining Execution plans 

Explanation:

Correct Answer D

Any SQL Database uses declarative statements that specify what data you want to retrieve. If you want to understand how it obtains the results, you should use look at execution plans. A query execution plan displays the cost associated with each step of the query. Using those costs, you can debug query performance issues and optimize your query.



A and B are for procedural languages.

C is wrong because it doesn't address the problem; in case you may find out which index to add looking at the execution plan.

For any further detail:

<https://cloud.google.com/spanner/docs/sql-best-practices>

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Question 29

Unattempted

Domain : Other

Examine the following Statement:

```
bq query \  
--use_legacy_sql=false \  
--external_table_definition=follows:/tmp/follows_def \  
'SELECT  
  COUNT(rowkey)  
FROM Clients'
```

Where external_table_definition is a JSON file with sourceUris and sourceFormat=BIGTABLE parameters.

Which kind of Data we are querying and which GCP product we are using?

- A. SQL Data with Cloud SQL
- B. SQL Data with Bigtable
- C. Big Query external tables with Google Drive
- D. Bigtable external tables with Big Query 

Explanation:

Correct Answer D

With Big Query you can run sql queries with external data from: Cloud SQL, Cloud Storage, Google Drive.

An external data source (also known as a federated data source) is a data source that you can query directly even though the data is not stored in BigQuery. Instead of loading or streaming the data, you create a table that references the external data source.

To query an external data source without creating a permanent table, you run a command to combine:

A table definition file with a query

An inline schema definition with a query

A JSON schema definition file with a query

The table definition file or supplied schema is used to create the temporary external table, and the query runs against the temporary external table. Querying an external data source using a temporary table is supported by the BigQuery CLI and API.

For any further detail:

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

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

<https://cloud.google.com/bigquery/external-table-definition>

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Question 30

Unattempted

Domain : Other

You are designing an application to be deployed in GKE that will manage multi-regional images.

These files must remain available for a month and then deleted. High performance must be maintained together with low cost and easy implementation.

What kind of storage will you adopt?

- A. Local SSD
- B. Regional persistent disk and regional SSD persistent disk
- C. Filestore
- D. Cloud Storage 
- E. Cloud Storage and Cloud CDN

Explanation:

question is about "kind of storage".

Correct Answer D

The only solution for multi-regional object storage is Cloud Storage.

In order to reach higher performances, the use of Cloud CDN is advisable.



Google Cloud CDN leverages Google's globally distributed edge points of presence to make faster distribution of contents served out of Compute Engine and Cloud Storage.

The lifecycle management of Cloud Storage makes it easy to manage deletion after a given period of time.

A is wrong because Local SSD is a transient, local block storage.

B and C are wrong because Filestore and regional SSD is not multi-regional

D is correct

E: "Cloud Storage and Cloud CDN" : is not a kind of 'Storage' Kinds"

For any further detail:

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

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

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

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Question 31**Unattempted****Domain :Deploying applications**

You are planning a procedure, which must be prepared by one of your colleagues, in order to create a VM with the required configuration (SO and Disk); the main requirement is to make sure the configuration will be flexible and easily upgradeable and it will be possible to automatically create other virtual machines.

What are the steps and commands to be performed (pick 2)?

Create instance and then create template with commands:

Create instance: gcloud compute instances create [INSTANCE_NAME]

- A. --image --create-disk



Create template: gcloud compute instance-templates create [INSTANCE_TEMPLATE_NAME] --source-instance=[SOURCE_INSTANCE]

Create instance and then create template with commands:

Create instance: gcloud compute instances start [INSTANCE_NAME] --image
B. --create-disk

Create template: gcloud compute templates create [INSTANCE_TEMPLATE_NAME] --source-instance=[SOURCE_INSTANCE]

Create instance with console and then let GCP prepare the commands for you and then

- C. Create template: gcloud compute templates create [INSTANCE_TEMPLATE_NAME] --source-instance=[SOURCE_INSTANCE]

Create instance with console and then let GCP prepare the commands for you and then

- D. Create template: gcloud compute instance-templates create [INSTANCE_TEMPLATE_NAME] --source-instance=[SOURCE_INSTANCE]



Explanation:

Correct answers: A, D

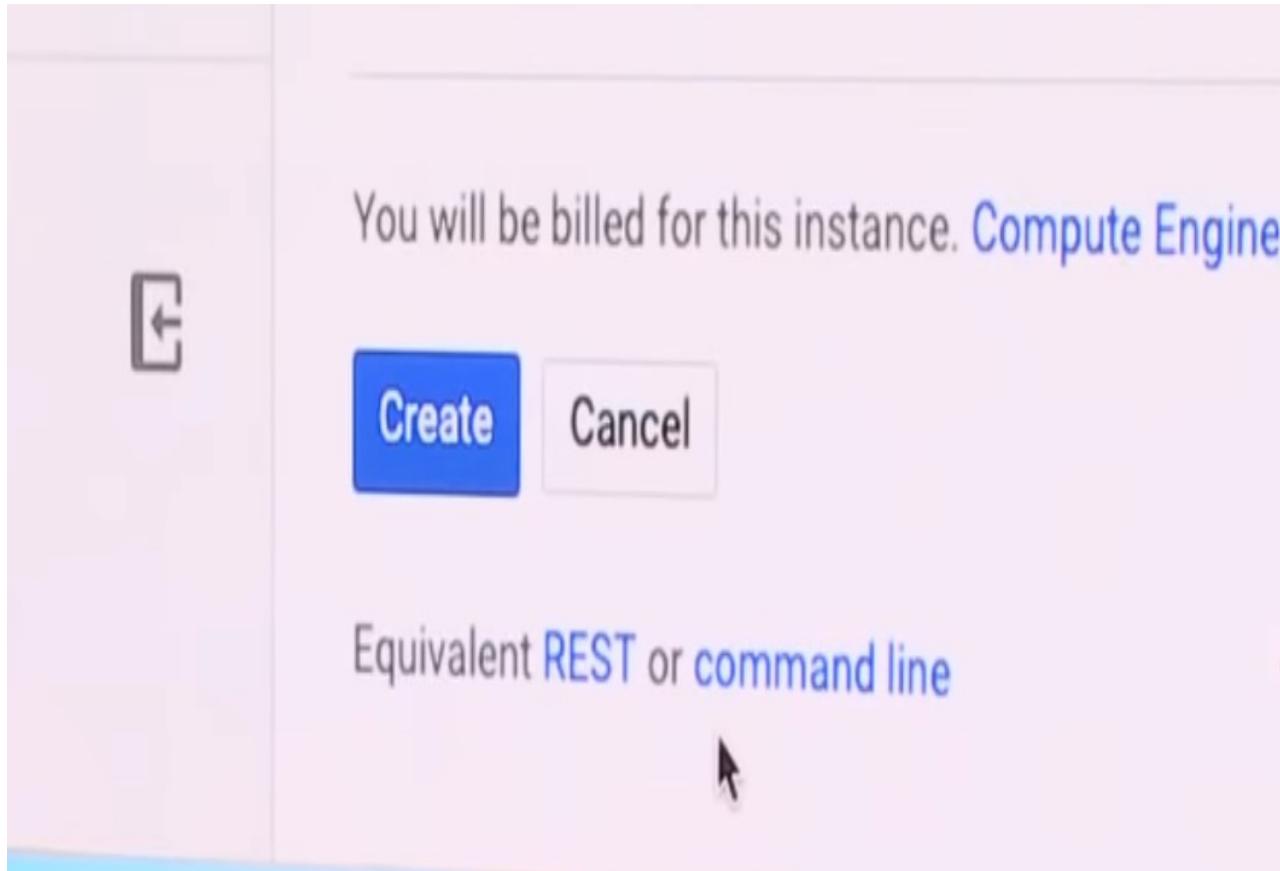
In order to automatically create other virtual machines with a saved and updatable configuration you have to create a template; that is a saved configuration used by GCP to automate the process.

You usually start from a boot disk image. This command gives you the list of available choices:

Choose image: gcloud compute images list

Then you may create the VM

with the console



or with commands . In this case the right syntax is:

Create instance: gcloud compute instances create [INSTANCE_NAME] --image --create-disk
Create template: gcloud compute instance-templates create
[INSTANCE_TEMPLATE_NAME] --source-instance=[SOURCE_INSTANCE]

For any further detail:

<https://cloud.google.com/compute/docs/instances/create-start-instance>

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

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Question 32

Unattempted

Domain :Deploying applications

You are planning a procedure, which must be prepared by one of your colleagues, in order to create a VM with the required configuration (SO and Disk).

You need this VM for an interruptible work and you want to keep expenses at a minimum and being sure that the configuration will be flexible and easily upgradeable and that it will be possible to automatically create other virtual machines.

What are the steps and commands to be performed (pick 2)?

- A. **Create instance** `gcloud compute instances create [INSTANCE_NAME] --preemptible`
- B. **Create instance** `gcloud compute instances start [INSTANCE_NAME] --temporary`
- C. **Create a template**
- D. **Create an image**

Explanation:

Correct answers: A, C

In order to automatically create other virtual machines with a saved and updatable configuration you have to create a template; that is a saved configuration used by GCP to automate the process.

A disk image doesn't set the preemptible flag.

Instead, you can create preemptible instances in a managed instance group, with the preemptible option in the instance template before you create or update the group.

For any further detail:

<https://cloud.google.com/compute/docs/instances/preemptible>

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Question 33

Unattempted

Domain :Deploying applications

You have a Virtual Machine with a persistent boot disk permanently attached.

You want to change the configuration of the VM and use the same disk without the need to copy or dump anything.

You may do it? What is the right answer?

- A. You can move a disk in any VM, in the same region
- B. You can move a disk in any VM, in any region
- C. You can move a disk in any VM, in the same zone 
- D. You always have to create a new disk from a snapshot or from an image

Explanation:

Correct answer: C

The documentation states:

Previously, boot disks were permanently attached to their VM instances. Now you can detach boot disks from your instance. This feature simplifies the process for repairing boot disks by allowing you to mount them to another instance without deleting your original instance. Additionally, you can replace the boot disks for an instance rather than having to recreate the entire VM instance.

Outside the local zone you have to create a snapshot or a disk image.

Disk images are faster to start.

Templates contain only configuration information.

For any further detail:

<https://cloud.google.com/compute/docs/disks/detach-reattach-boot-disk>

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

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Question 34

Unattempted

Domain :Deploying applications

Your team set up the standard VM configuration for a group of applications and prepared a template.

Everything is working just fine.

Now the traffic is increasing and you want everything to be more scalable, high available and

secure.

What is the very first action to take?

- A. For next VM you put the --scalable parameter in the template
- B. Set up a Load Balancer
- C. Take a snapshot of the boot disk
- D. Set up a managed instance group 

Explanation:

Correct answer: D

The managed instance group (MIG) gives you high availability: If an instance stops, crashes, is malfunctioning or is deleted by an action other than an instance group management command, the MIG automatically recreates that instance in accordance with the original instance's specification.

Managed instance groups support autoscaling that dynamically adds or removes instances. You have to setup a Load Balancer in front of the MIG

A is wrong because there is not a --scalable parameter

B is wrong because you have to set up first a MIG

C is wrong because is not what is required

For any further detail:

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

<https://cloud.google.com/compute/docs/instance-groups/rolling-out-updates-to-managed-instance-groups>

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Question 35

Unattempted

Domain :Deploying applications

Your team set up the standard VM configuration for a group of applications and prepared a template.

Everything is working just fine.

Your team adopted Agile methodologies, so you update your app frequently.

You want these operations to be performed without any disruption.

What is the very first action to take?

- A. Start a new VM and manually switch traffic
- B. Set up a Load Balancer
- C. Use App Engine standard edition
- D. Set up a managed instance group 

Explanation:

Correct answer: D

The managed instance group (MIG) is a group of instances capable of acting as one.

You can easily and safely deploy new versions of software to instances in a managed instance group. The rollout of an update happens automatically based on your specifications: you can control the speed and scope of the update rollout in order to minimize disruptions to your application. You can optionally perform partial rollouts which allows for canary testing.

A is wrong because there is disruption in this way

B is wrong because you have to set up first a MIG

C is wrong because App Engine can perform these special deployments but you have to re-engineer the apps. No need of that.

For any further detail:

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

<https://cloud.google.com/compute/docs/instance-groups/rolling-out-updates-to-managed-instance-groups>

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Question 36**Unattempted****Domain :Deploying applications**

In your Company you used to secure VMs with the standard GCP way, with the Compute Engine configuration of persistent SSH key metadata.

But a new compliance rule now states that all the cryptographic keys for Linux instances must be locally produced.

Is it possible to do that in GCP? How?

- A. Generate a new SSH key with ssh-keygen 
- B. Ask GCP for a new SSH key
- C. Prepare public SSH key files and store them in Cloud Storage
- D. Prepare public SSH key files and setup SSH key metadata 
- E. Manage Instance and User Permissions 
- F. Give public permission to the Users

Explanation:

Correct answers: A, D, E

In order to produce locally cryptographic keys you have to use ssh-keygen and then set up correctly private and public key as pointed out in the documentation.

GCP stores public key in metadata so that you can use IAM to manage User controlled access.

B is wrong because the cryptographic keys have to be produce locally

C is wrong because is not secure to store them in Cloud Storage and it is hard to manage

F is wrong because it drives to the opposite security direction.

For any further detail:

<https://cloud.google.com/compute/docs/instances/connecting-to-instance>

<https://cloud.google.com/compute/docs/instances/adding-removing-ssh-keys>

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In your Company you used to secure VMs with the standard GCP way, with the Compute Engine configuration of persistent SSH key metadata.

But a new compliance rule now states that all the users must undergo stricter security with two-factor authentication.

Is it possible to do that in GCP? How?

- A. Use OS Login 
- B. Use locally generated SSH keys in metadata
- C. Use Temporarily user access to instances
- D. In GCP it is not possible to have two-factor authentication

Explanation:

Correct answers: A

The OS Login is the standard feature for GCP that allows to use Compute Engine IAM roles to manage SSH access to Linux instances.

It is possible and easy to add an extra layer of security by setting up OS Login with two-factor authentication, and manage access at the organization level by setting up organization policies.

What you have to do is:

Enable 2FA for your Google account or domain.

Enable 2FA on your project or instance.

Grant the necessary IAM roles to the correct users .

For any further detail:

<https://cloud.google.com/compute/docs/oslogin/setup-two-factor-authentication>

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Domain :Deploying applications

You want to have more control over your Cloud GCP VMs. In particular, you want to optimize performance and find the optimal configuration so that your applications are always blazing fast and available.

You are looking for detailed Disk and Memory metrics and the statistics that you usually collect with the "collectd" Linux command.

Which function can you activate and how?

- A. Stackdriver Monitoring agent 
- B. Cloud Armor
- C. Nothing: GCP Console alone supply anything
- D. You must use a third party tool to have an advanced monitor

Explanation:

Correct answers: A

The Stackdriver Monitoring agent is a collectd-based daemon that gathers system and application metrics from virtual machine instances and sends them to Monitoring.

Metrics help understand how applications and system services are performing.

Stackdriver can monitor GCP, AWS, and third-party software.

Standard Stackdriver Monitoring can access some instance metrics, but using the Monitoring agent (optional) you can define and gather all the data you need.

By default, the Monitoring agent collects disk, CPU, network, and process metrics. You can configure the Monitoring agent also to monitor third-party applications.

Cloud Armor is wrong because it is a service against denial of service and web attacks.

For any further detail:

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

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

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Question 39

Unattempted

Domain :Deploying applications

Your team set up the standard VM configuration for a group of applications and prepared an autoscaled managed instance group using an instance template.

At startup your VMs have to be equipped with the correct software and ready to serve user requests.

You have legacy applications, so it is possible that the startup procedures are quite complex. Which are the actions to take (pick 2)?

- A. Use several instance templates for different configurations
- B. Store your script in Cloud Repository
- C. Store your script on Cloud Storage 
- D. Use custom metadata keys for different configurations 

Explanation:

Correct answers: C, D

Startup scripts can perform automated tasks every time your instance boots up, such as:

- installing software,
- performing updates,
- turning on services

You can provide a startup script

- In a file in the local VM

- Directly with --metadata startup-script

With the Cloud Storage URL

You may also set parameters in startup scripts with custom metadata key/values.

A is wrong because it is not a good idea to create different templates when you can use parameters

B is wrong because it is not possible to use Cloud Repository for this purpose.

For any further detail:

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

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Question 40

Unattempted

Domain :Deploying applications

Your team set up the standard VM configuration for a group of applications and prepared an autoscaled managed instance group using an instance template,

At startup your VMs have to be equipped with the correct software and ready to serve user requests.

You have legacy applications, so it is possible that the startup procedures are quite complex. Your team prepared the startup scripts but they don't know how to set custom values, so they asked for your advice.

What are the correct instructions you can give them (pic 2)?

- A. Set custom metadata at instance and at project level 
- B. Set custom metadata at instance level
- C. Set custom metadata at project level
- D. Set System Environment variables
- E. Use the parameters in script with the Syntax \${PARAM}
- F. Use the parameters in script with the Syntax \$PARAM 

Explanation:

Correct answers: A, F

Custom metadata can be set at instance and at project level, so you can have an optimal organization.

The correct syntax is \$PARAM, as stated in the documentation.

The Metadata section allows you to specify key-value pairs associated with the instance. These values are stored in a metadata server, which is available for querying using the Compute Engine API. Metadata tags are especially useful if you have a common script you want to run on startup or shutdown but want the behavior of the script to vary according to some metadata values.

For any further detail:

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

<https://cloud.google.com/compute/docs/storing-retrieving-metadata>

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Question 41

Unattempted

Domain :Deploying applications

Your team set up the standard VM configuration for a group of applications and prepared a template.

Now the traffic is increasing and you want everything to be more scalable, always available and secure.

You already set up a managed instance group (MIG) for high availability in case malfunctioning of instances.

Now you want to achieve autoscaling, too.

Your web and mobile apps manage session data in memory and work with HTTPS.

What is the service you have to use?

- A. L7 Load Balancer
- B. L3 Load Balancer
- C. HTTPS Load Balancing with generated cookie session affinity 
- D. Network Load Balancing with generated cookie session affinity

Explanation:

Correct answer: C

You need an External HTTPs Load Balancer because it manages HTTPs and session affinity.

L7 Load Balancer means an Application Load Balancer while L3 is a Network Load Balancer.

An HTTPS load balancer uses a target HTTPS proxy and requires one signed SSL certificate installed on the target HTTPS proxy for the load balancer. You can use self-managed or Google-managed SSL certificates.

The client SSL session terminates at the load balancer.

Session affinity provides a best-effort attempt to send requests from a particular client to the same backend for as long as the backend is healthy and has the capacity, according to the configured balancing mode.

It can be done with IP and with cookies; for mobile apps the cookies choice is preferable, because if a client moves from one network to another, its IP address changes, so the affinity will be broken.

Network (L3) load balancers direct TCP or UDP traffic across regional backends. You can use Network Load Balancing to load balance UDP, TCP, and SSL traffic on ports that are not supported by the TCP proxy load balancers and SSL proxy load balancers.

For any further detail:

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

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Question 42

Unattempted

Domain :Deploying applications

You want to use a managed Kubernetes Service and you are trying GKE.

They told you that it is very easy to set up a GKE cluster.

Which actions do you have to perform (pick 3)?

- A. Create the pod

- B. Create a Volume
- C. Create the cluster 
- D. Create deployment 
- E. Create a Service 

Explanation:

Correct answers: C, D, E

The correct steps to deploy a containerized application with Google Kubernetes Engine are:

Create a GKE cluster: A cluster consists of at least one cluster master machine and multiple worker machines called nodes. Nodes are Compute Engine virtual machine (VM) instances that run the Kubernetes processes necessary to make them part of the cluster.

Get authentication credentials to interact with the cluster: gcloud container clusters get-credentials cluster-name

Deploy an application to the cluster: Kubernetes provides the Deployment object for deploying stateless applications like web servers. Service objects define rules and load balancing for accessing your application from the internet

Expose the Deployment: expose it to the internet so that users can access it, a **Service will be created**, a Kubernetes resource that exposes your application to external traffic.

For any further detail:

<https://cloud.google.com/kubernetes-engine/docs/quickstart>

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Question 43**Unattempted****Domain :Deploying applications**

Your team has deployed some applications in GKE.

They asked you how they can view a detailed list of the containers with a few commands. Which is the right statement to use?

- A. gcloud container images describe 
- B. gcloud container images list
- C. kubectl container list images
- D. kubectl container list images --detail

Explanation:

Correct answer: A

"gcloud container images describe" gives a detailed description of the containers.

Images are managed by GCP, so the correct command is gcloud not kubectl.

B is wrong because "gcloud container images list" gives a simple list of the images, not a detailed one.

C and D are wrong because it is a task managed by GCP, not by Kubernetes directly.

For any further detail:

<https://cloud.google.com/container-registry/docs/managing>

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Question 44

Unattempted

Domain :Deploying applications

You have been asked to control your apps deployed in Kubernetes Engine (GKE).

In particular the need to :

key metrics, such as CPU utilization, memory utilization,

the number of open incidents.

clusters by their infrastructure, workloads, or services.

You want to use Stackdriver Monitoring and Logging.

Which of the following actions you are going to perform (pick 4)?

- A. Stackdriver Monitoring is enabled by default for all GKE Clusters 

- B. Enable Stackdriver Monitoring for any cluster with: --enable-stackdriver-kubernetes
- C. Use Stackdriver GKE Monitoring dashboard 
- D. Enable logging for Clusters with --enable-cloud-logging
- E. Logging for Clusters is automatically enabled 
- F. Logs are stored for up to 30 days 
- G. Logs are stored forever

Explanation:

Correct answers: A, C, E, F

Google Kubernetes Engine (GKE) includes managed support for Stackdriver Monitoring and Stackdriver Logging.

Stackdriver Kubernetes Engine Monitoring manages Monitoring and Logging services together and features a Stackdriver Kubernetes Engine Monitoring interface that provides a dashboard customized for GKE clusters with the following resources:

Cluster's key metrics, such as CPU utilization, memory utilization, and the number of open incidents.

Clusters by their infrastructure, workloads, or services.

Namespaces, nodes, workloads, services, pods, and containers.

Log entries, using the Logs Viewer, for pods and containers

When you create a new GKE cluster, Stackdriver Kubernetes Engine Monitoring is enabled by default.

Logs, separated Services, are stored for up to 30 days.

For any further detail:

<https://cloud.google.com/monitoring/kubernetes-engine/>

<https://cloud.google.com/monitoring/kubernetes-engine/installing>

<https://cloud.google.com/monitoring/kubernetes-engine/observing>

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Question 45**Unattempted**

Domain :Deploying applications

You are planning to migrate several HTTP(s) apps to GKE and are concerned with scalability and which methods are the best to follow.

To create and manage a load balancer for HTTP(s) apps, which of these options are possible (pick 3)?

- A. When you deploy an app in GKE, a K8s Service is created that balances the load 
- B. With GKE you cannot use a Load Balancer
- C. GKE offers integrated support for TCP/UDP and HTTP(S) external load balancers 
- D. GKE offers integrated support for TCP/UDP and HTTP(S) external and internal load balancers
- E. You have to configure Internal HTTP(S) Load Balancing if you need it 

Explanation:

Correct answers: A, C, E

When you create and deploy an app in GKE, the steps are as follows:

Create a GKE cluster: A cluster consists of at least one cluster master machine and multiple worker machines called nodes. Nodes are Compute Engine virtual machine (VM) instances that run the Kubernetes processes necessary to make them part of the cluster.

Get authentication credentials to interact with the cluster: gcloud container clusters get-credentials cluster-name

Deploy an application to the cluster: Kubernetes provides the Deployment object for deploying stateless applications like web servers. Service objects define rules and load balancing for accessing your application from the internet

Expose the Deployment: expose it to the internet so that users can access it, a **Service will be created**, a Kubernetes resource that exposes your application to external traffic.

So, there is integrated support for internal and external load balancers (services).

For a publicly accessible application GKE offers two types of cloud load balancing:

1. You can create **TCP/UDP load balancers** by specifying type: LoadBalancer on a **Service** resource manifest. Although a TCP load balancer works for HTTP web servers, they are not designed to terminate HTTP(S) traffic as they are not aware of individual HTTP(S) requests. GKE does not configure any **health checks** for TCP/UDP load balancers. See the **Guestbook tutorial** for an example of this type of load balancer.
2. You can create **HTTP(S) load balancers** by using an **Ingress** resource. HTTP(S) load balancers are designed to terminate HTTP(S) requests and can make better context-aware load balancing decisions. They offer features like customizable **URL maps** and **TLS termination**. GKE automatically configures **health checks** for HTTP(S) load balancers.

For an internal HTTP(S) load balancer service you have to setup:

HTTP health check

Backend service with a NEG as the backend

A URL map

SSL certificate (for HTTPS)

Target proxy

Forwarding rule

For any further detail:

<https://cloud.google.com/kubernetes-engine/docs/tutorials/http-balancer>

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

<https://cloud.google.com/load-balancing/docs/l7-internal/set-up-gke-pods>

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Question 46

Unattempted

Domain :Deploying applications

You are the leader of a development group; you deploy your code in containers and you want

to use Continuous Integration and Deployment Techniques and you care to organize procedure in the best way.

In your company the new trend is to deploy apps and services within GKE

You want to start the deployment as soon as new Source is committed.

Which is the best method to deploy an application to Kubernetes GKE automatically?

- A. Use the gke-deploy command 
- B. Add the gke-deploy step in your build configuration file
- C. Use kubectl-deploy command
- D. Add the kubectl-deploy step in your build configuration file:

Explanation:

Correct answer: A

Cloud Build provides a **gke-deploy builder** that enables you to deploy a containerized application to a GKE cluster.

gke-deploy is a wrapper around kubectl, the command-line interface for Kubernetes. It applies Google's recommended practices for deploying applications to Kubernetes by:

- Updating the application's Kubernetes configuration to use the container image's digest instead of a tag.

- Adding **recommended labels** to the Kubernetes configuration.

- Retrieving credentials for the GKE clusters to which you're deploying the image.

- Waiting for the Kubernetes configuration that was submitted to be ready.

If you want to deploy your applications using kubectl directly and do not need additional functionality, Cloud Build also provides a **kubectl builder** that you can use to deploy your application to a GKE cluster.

For any further detail:

<https://cloud.google.com/cloud-build/docs/deploying-builds/deploy-gke>

<https://cloud.google.com/cloud-build/docs/quickstart-docker>

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You have developed an application that calls a service running in a Kubernetes cluster. The service runs in pods that can be terminated if they are unhealthy and replaced with other pods that might have a different IP address.

How should you code your application to ensure it functions properly in this situation?

- A. Use Compute Engine autoscaling for managed instance groups for your cluster nodes
- B. Use GKE's cluster autoscaler standard features
- C. Use Compute Engine autoscaling for managed instance groups with preemptible VMs
- D. Use GKE's cluster autoscaler with a node pool made by preemptible VMs



Explanation:

Correct Answer: D

Cluster autoscaler performs the following actions:

When demand is high, it adds nodes to the node pool.

When demand is low, it scales back down to a minimum size that you designate.

This can increase the availability of your workloads when you need it while controlling costs.

Cluster autoscaler considers the relative cost of the instance types in the various pools and instance groups and attempts to expand the least expensive possible node pool. The reduced cost of node pools containing preemptible VMs is taken into account.

Of course, you have to configure a node pool made by preemptible VMs, which is low cost but temporary instances.

For any further detail:

<https://cloud.google.com/kubernetes-engine/docs/concepts/cluster-autoscaler>

<https://cloud.google.com/preemptible-vms/>

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Question 48

Unattempted

Domain :Deploying applications

With your team, you are planning to migrate HTTPs apps to GKE clusters and worry about scalability and availability.

You re-engineered the apps so that they are sessionless.

You want the best performances and high availability.

How do you manage the scalability of an app distributed in GKE easily and at the lowest cost?

- A. Use Compute Engine autoscaling for managed instance groups for your cluster nodes
- B. Use GKE's cluster autoscaler standard features, only preemptible VMs and multi-zonal clusters

- C. Use Compute Engine autoscaling for managed instance groups with preemptible VMs
 - D. Use GKE's cluster autoscaler with a Vertical Pod Autoscaling, one of the node pool made by preemptible VMs and regional clusters 
-

Explanation:

Correct answer: D

GKE's cluster autoscaler automatically resizes the number of nodes in a given node pool, based on the demands of your workloads. You don't need to manually add or remove nodes or over-provision your node pools. Instead, you specify a minimum and maximum size for the node pool, and the rest is automatic.

If your node pool contains multiple managed instance groups with the same instance type, cluster autoscaler attempts to keep these managed instance group sizes balanced when scaling up. This can help prevent an uneven distribution of nodes among managed instance groups in multiple zones of a node pool.

Cluster autoscaler considers the relative cost of the instance types in the various pools, and attempts to expand the least expensive possible node pool. The reduced cost of node pools containing preemptible VMs is taken into account.

Vertical pod autoscaling (VPA) is a feature that can recommend values for CPU and memory requests and limits, or it can automatically update the values.

With Vertical pod autoscaling:

Cluster nodes are used efficiently, because Pods use exactly what they need.

Pods are scheduled onto nodes that have the appropriate resources available.

You don't have to run time-consuming benchmarking tasks to determine the correct values for CPU and memory requests.

Maintenance time is reduced, because the autoscaler can adjust CPU and memory requests over time without any action on your part.

With GKE you don't have to use the scalability features of Compute Engine.

For any further detail:

<https://cloud.google.com/kubernetes-engine/docs/concepts/cluster-autoscaler>

<https://cloud.google.com/kubernetes-engine/docs/concepts/verticalpodautoscaler>

<https://cloud.google.com/kubernetes-engine/docs/concepts/scalability>

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Question 49**Unattempted****Domain :Deploying applications**

You need to migrate a Python app to GCP. The main problem is that the app may have sudden traffic bursts and you have to scale very quickly.

The main requirements for the app are therefore performance and availability.

Given these requirements, which platform do you choose?

- A. Compute Engine with Managed instances group
- B. App Engine Standard with automatic scaling 
- C. App Engine Flex with Automatic scaling
- D. Cloud Functions

Explanation:

Correct answer: B

App Engine Standard Edition scales very quickly and it is faster than the other solutions because the tech environments are already ready to go.

So, if you are sending batches of requests to your services, for example, to a task queue for processing, a large number of instances will be created quickly. We recommend controlling this by rate limiting the number of requests sent per second, if possible. For example, in an App Engine task queue, you can control the rate at which tasks are pushed.

App Engine also scales instances in reverse when request volumes decrease. This scaling helps ensure that all of your application's current instances are being used to optimal efficiency and cost effectiveness.

A is wrong because Compute Engine is slower because it has to start new instances.

C is wrong because App Engine Flex is slower because it has to start new containers.

D is wrong because Cloud Functions are slower then App Engine and are not suitable for all the applications

For any further detail:

<https://cloud.google.com/appengine/docs/standard/python/how-instances-are-managed>

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Question 50**Incorrect**

Domain :Deploying applications

You asked a colleague of your team to plan the installation and the operation management of a Python application in App Engine standard edition.

He came back to you with doubts about the hierarchical structure of the platform.

He does not understand which is the correct organization among the following.

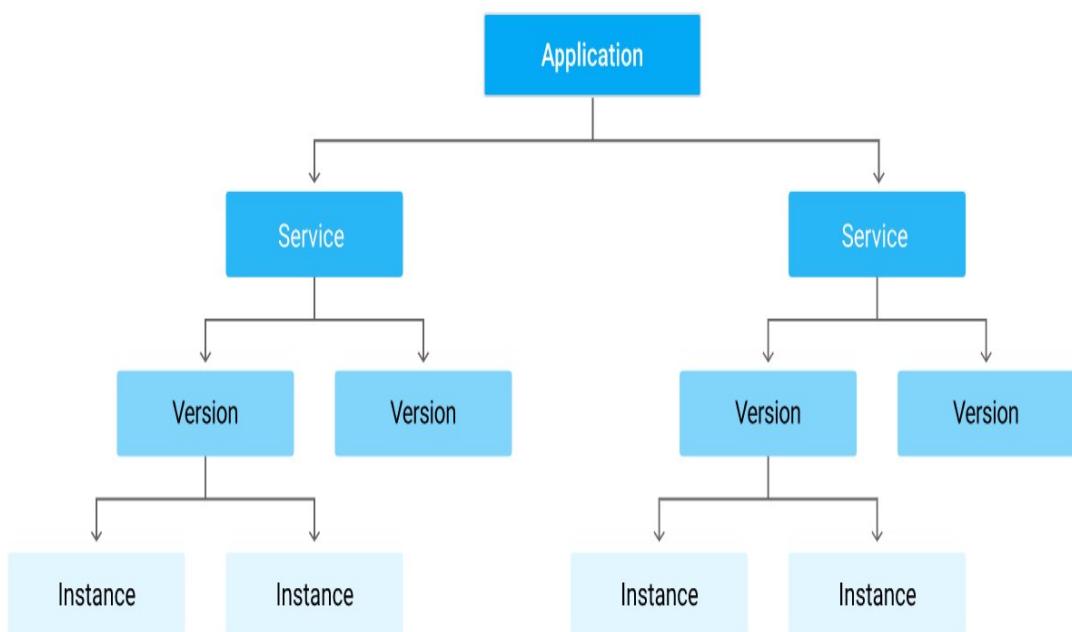
What is the correct answer?

- A. Instance, Service and Versions
- B. Application, Instance, Service and Version 
- ✓ C. Application, Service, Version, Instance 
- D. Application, Service and Versions
- E. Application, Service and Versions, Instance

Explanation:

Correct answer: B

Here is the hierarchical organization of an App Engine Application.



Each App Engine application is a top-level container that includes the service, version, and instance resources.

Services: App Engine services behave like **microservices**. Therefore, you can run your whole app in a single service or you can design and deploy multiple services to run as **a set of microservices**.

So you may divide a big app in mobile and web procedure and specialized backends. Very useful with **microservices**.

Versions with **versions** each service, independently, may switch between different versions for rollbacks, testing, or other temporary events. You can route traffic to one or more specific versions of your app by **migrating** or **splitting** traffic.

Instances

The versions within your services run on one or more instances. By default, App Engine scales your app to match the load. Your apps will scale up the number of instances that are running to provide consistent performance, or scale down to minimize idle instances and reduces costs. For more information about instances, see **How Instances are Managed**.

For any further detail:

<https://cloud.google.com/appengine/docs/standard/python/an-overview-of-app-engine>

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