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QUESTION NO: 1

You want to re-architect a monolithic application so that it follows a microservices model. You want to accomplish this efficiently while minimizing the impact of this change to the business.

Which approach should you take?

- A. Deploy the application to Compute Engine and turn on autoscaling.
- B. Replace the application's features with appropriate microservices in phases.
- C. Refactor the monolithic application with appropriate microservices in a single effort and deploy it.
- D. Build a new application with the appropriate microservices separate from the monolith and replace it when it is complete.

ANSWER: C**Explanation:**

Reference: <https://cloud.google.com/solutions/migrating-a-monolithic-app-to-microservices-gke>

QUESTION NO: 2

Your team develops services that run on Google Kubernetes Engine. You need to standardize their log data using Google-recommended practices and make the data more useful in the fewest number of steps. What should you do? (Choose two.)

- A. Create aggregated exports on application logs to BigQuery to facilitate log analytics.
- B. Create aggregated exports on application logs to Cloud Storage to facilitate log analytics.
- C. Write log output to standard output (stdout) as single-line JSON to be ingested into Cloud Logging as structured logs.
- D. Mandate the use of the Logging API in the application code to write structured logs to Cloud Logging.
- E. Mandate the use of the Pub/Sub API to write structured data to Pub/Sub and create a Dataflow streaming pipeline to normalize logs and write them to BigQuery for analytics.

ANSWER: A E**QUESTION NO: 3**

Your API backend is running on multiple cloud providers. You want to generate reports for the network latency of your API. Which two steps should you take? (Choose two.)

- A. Use Zipkin collector to gather data.

- B. Use Fluentd agent to gather data.
- C. Use Stackdriver Trace to generate reports.
- D. Use Stackdriver Debugger to generate report.
- E. Use Stackdriver Profiler to generate report.

ANSWER: C E

QUESTION NO: 4

You are designing an application that consists of several microservices. Each microservice has its own RESTful API and will be deployed as a separate Kubernetes Service. You want to ensure that the consumers of these APIs aren't impacted when there is a change to your API, and also ensure that third-party systems aren't interrupted when new versions of the API are released. How should you configure the connection to the application following Google-recommended best practices?

- A. Use an Ingress that uses the API's URL to route requests to the appropriate backend.
- B. Leverage a Service Discovery system, and connect to the backend specified by the request.
- C. Use multiple clusters, and use DNS entries to route requests to separate versioned backends.
- D. Combine multiple versions in the same service, and then specify the API version in the POST request.

ANSWER: A

QUESTION NO: 5

Your company needs a database solution that stores customer purchase history and meets the following requirements:

- Customers can query their purchase immediately after submission.

- Purchases can be sorted on a variety of fields.
- Distinct record formats can be stored at the same time.

Which storage option satisfies these requirements?

- A. Firestore in Native mode
- B. Cloud Storage using an object read
- C. Cloud SQL using a SQL SELECT statement
- D. Firestore in Datastore mode using a global query

ANSWER: A

QUESTION NO: 6

You are designing a resource-sharing policy for applications used by different teams in a Google Kubernetes Engine cluster. You need to ensure that all applications can access the resources needed to run. What should you do? (Choose two.)

- A. Specify the resource limits and requests in the object specifications.
- B. Create a namespace for each team, and attach resource quotas to each namespace.
- C. Create a LimitRange to specify the default compute resource requirements for each namespace.
- D. Create a Kubernetes service account (KSA) for each application, and assign each KSA to the namespace.
- E. Use the Anthos Policy Controller to enforce label annotations on all namespaces. Use taints and tolerations to allow resource sharing for namespaces.

ANSWER: B C**Explanation:**

<https://kubernetes.io/docs/concepts/policy/resource-quotas/>

<https://kubernetes.io/docs/concepts/policy/limit-range/>

<https://cloud.google.com/blog/products/containers-kubernetes/kubernetes-best-practices-resource-requests-and-limits>

QUESTION NO: 7

Case study

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Company Overview

HipLocal is a community application designed to facilitate communication between people in close proximity. It is used for event planning and organizing sporting events, and for businesses to connect with their local communities. HipLocal launched recently in a few neighborhoods in Dallas and is rapidly growing into a global phenomenon. Its unique style of hyper-local community communication and business outreach is in demand around the world.

Executive Statement

We are the number one local community app; it's time to take our local community services global. Our venture capital investors want to see rapid growth and the same great experience for new local and virtual communities that come online, whether their members are 10 or 10000 miles away from each other.

Solution Concept

HipLocal wants to expand their existing service, with updated functionality, in new regions to better serve their global customers. They want to hire and train a new team to support these regions in their time zones. They will need to ensure that the application scales smoothly and provides clear uptime data.

Existing Technical Environment

HipLocal's environment is a mix of on-premises hardware and infrastructure running in Google Cloud Platform. The HipLocal team understands their application well, but has limited experience in global scale applications. Their existing technical environment is as follows:

- Existing APIs run on Compute Engine virtual machine instances hosted in GCP.
- State is stored in a single instance MySQL database in GCP.
- Data is exported to an on-premises Teradata/Vertica data warehouse.
- Data analytics is performed in an on-premises Hadoop environment.
- The application has no logging.
- There are basic indicators of uptime; alerts are frequently fired when the APIs are unresponsive.

Business Requirements

HipLocal's investors want to expand their footprint and support the increase in demand they are seeing. Their requirements are:

- Expand availability of the application to new regions.
- Increase the number of concurrent users that can be supported.
- Ensure a consistent experience for users when they travel to different regions.
- Obtain user activity metrics to better understand how to monetize their product.
- Ensure compliance with regulations in the new regions (for example, GDPR).
- Reduce infrastructure management time and cost.
- Adopt the Google-recommended practices for cloud computing.

Technical Requirements

- The application and backend must provide usage metrics and monitoring.
- APIs require strong authentication and authorization.
- Logging must be increased, and data should be stored in a cloud analytics platform.
- Move to serverless architecture to facilitate elastic scaling.
- Provide authorized access to internal apps in a secure manner.

In order to meet their business requirements, how should HipLocal store their application state?

- A. Use local SSDs to store state.
- B. Put a memcache layer in front of MySQL.
- C. Move the state storage to Cloud Spanner.
- D. Replace the MySQL instance with Cloud SQL.

ANSWER: B

QUESTION NO: 8

You are using Cloud Build for your CI/CD pipeline to complete several tasks, including copying certain files to Compute Engine virtual machines. Your pipeline requires a flat file that is generated in one builder in the pipeline to be accessible by subsequent builders in the same pipeline. How should you store the file so that all the builders in the pipeline can access it?

- A. Store and retrieve the file contents using Compute Engine instance metadata.
- B. Output the file contents to a file in /workspace. Read from the same /workspace file in the subsequent build step.
- C. Use gsutil to output the file contents to a Cloud Storage object. Read from the same object in the subsequent build step.
- D. Add a build argument that runs an HTTP POST via curl to a separate web server to persist the value in one builder. Use an HTTP GET via curl from the subsequent build step to read the value.

ANSWER: B

Explanation:

<https://cloud.google.com/build/docs/build-config-file-schema>

QUESTION NO: 9

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HipLocal wants to reduce the number of on-call engineers and eliminate manual scaling.

Which two services should they choose? (Choose two.)

- A.** Use Google App Engine services.
- B.** Use serverless Google Cloud Functions.
- C.** Use Knative to build and deploy serverless applications.
- D.** Use Google Kubernetes Engine for automated deployments.
- E.** Use a large Google Compute Engine cluster for deployments.

ANSWER: B C

QUESTION NO: 10

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In order for HipLocal to store application state and meet their stated business requirements, which database service should they migrate to?

- A. Cloud Spanner
- B. Cloud Datastore
- C. Cloud Memorystore as a cache
- D. Separate Cloud SQL clusters for each region

ANSWER: A

QUESTION NO: 11

Your company has a data warehouse that keeps your application information in BigQuery. The BigQuery data warehouse keeps 2 PBs of user data. Recently, your company expanded your user base to include EU users and needs to comply with these requirements:

- Your company must be able to delete all user account information upon user request.
- All EU user data must be stored in a single region specifically for EU users.

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

- A. Use BigQuery federated queries to query data from Cloud Storage.
- B. Create a dataset in the EU region that will keep information about EU users only.
- C. Create a Cloud Storage bucket in the EU region to store information for EU users only.
- D. Re-upload your data using to a Cloud Dataflow pipeline by filtering your user records out.
- E. Use DML statements in BigQuery to update/delete user records based on their requests.

ANSWER: C E

Explanation:

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

QUESTION NO: 12

You are configuring a continuous integration pipeline using Cloud Build to automate the deployment of new container images to Google Kubernetes Engine (GKE). The pipeline builds the application from its source code, runs unit and integration tests in separate steps, and pushes the container to Container Registry. The application runs on a Python web server.

The Dockerfile is as follows:

```
FROM python:3.7-alpine -  
COPY . /app -  
WORKDIR /app -  
RUN pip install -r requirements.txt  
CMD [ "gunicorn", "-w 4", "main:app" ]
```

You notice that Cloud Build runs are taking longer than expected to complete. You want to decrease the build time. What should you do? (Choose two.)

- A. Select a virtual machine (VM) size with higher CPU for Cloud Build runs.
- B. Deploy a Container Registry on a Compute Engine VM in a VPC, and use it to store the final images.
- C. Cache the Docker image for subsequent builds using the `--cache-from` argument in your build config file.
- D. Change the base image in the Dockerfile to `ubuntu:latest`, and install Python 3.7 using a package manager utility.
- E. Store application source code on Cloud Storage, and configure the pipeline to use `gsutil` to download the source code.

ANSWER: A C

Explanation:

<https://cloud.google.com/build/docs/optimize-builds/increase-vcpu-for-builds>

By default, Cloud Build runs your builds on a standard virtual machine (VM). In addition to the standard VM, Cloud Build provides several high-CPU VM types to run builds. To increase the speed of your build, select a machine with a higher vCPU to run builds. Keep in mind that although selecting a high vCPU machine increases your build speed, it may also increase the startup time of your build as Cloud Build only starts non-standard machines on demand.

https://cloud.google.com/build/docs/optimize-builds/speeding-up-builds#using_a_cached_docker_image

The easiest way to increase the speed of your Docker image build is by specifying a cached image that can be used for subsequent builds. You can specify the cached image by adding the `--cache-from` argument in your build config file, which will instruct Docker to build using that image as a cache source.

QUESTION NO: 13

You are creating a Google Kubernetes Engine (GKE) cluster and run this command:

```
> gcloud container clusters create large-cluster --num-nodes 200
```

The command fails with the error:

```
insufficient regional quota to satisfy request: resource "CPUS": request requires '200.0' and is short '176.0'. project has a quota of '24.0' with '24.0' available
```

You want to resolve the issue. What should you do?

- A. Request additional GKE quota in the GCP Console.
- B. Request additional Compute Engine quota in the GCP Console.
- C. Open a support case to request additional GKE quota.
- D. Decouple services in the cluster, and rewrite new clusters to function with fewer cores.

ANSWER: A

QUESTION NO: 14

You are deploying your applications on Compute Engine. One of your Compute Engine instances failed to launch. What should you do? (Choose two.)

- A. Determine whether your file system is corrupted.
- B. Access Compute Engine as a different SSH user.
- C. Troubleshoot firewall rules or routes on an instance.
- D. Check whether your instance boot disk is completely full.
- E. Check whether network traffic to or from your instance is being dropped.

ANSWER: A D

Explanation:

<https://cloud.google.com/compute/docs/troubleshooting/vm-startup>

QUESTION NO: 15

You manage an ecommerce application that processes purchases from customers who can subsequently cancel or change those purchases. You discover that order volumes are highly variable and the backend order-processing system can only process one request at a time. You want to ensure seamless performance for customers regardless of usage volume. It is crucial that customers' order update requests are performed in the sequence in which they were generated. What should you do?

- A. Send the purchase and change requests over WebSockets to the backend.
- B. Send the purchase and change requests as REST requests to the backend.
- C. Use a Pub/Sub subscriber in pull mode and use a data store to manage ordering.

D. Use a Pub/Sub subscriber in push mode and use a data store to manage ordering.

ANSWER: C

Explanation:

<https://cloud.google.com/pubsub/docs/pull>