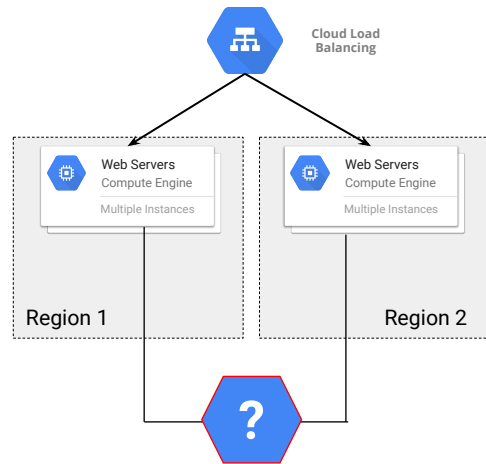


# Sample Exam Questions

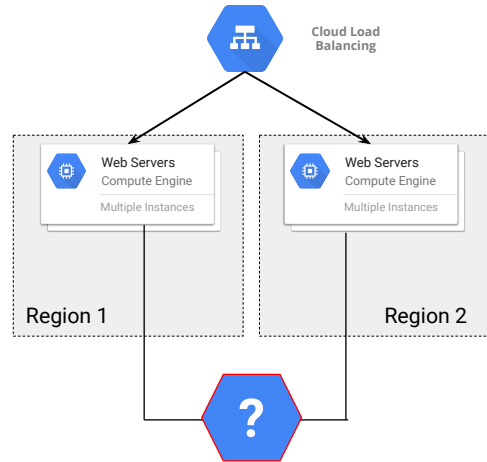
## How to keep data in synch across regions?

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



## How to keep data in synch across regions?

- A. Cloud SQL
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Cloud Storage Multi-regional bucket stays in synch between regions automatically.  
The other services listed are in a single region.

# Solution

D - Cloud Storage Multi-regional bucket stays in synch between regions automatically.

A, B, C - The other services listed are in a single region.



documentation references

## **An existing application uses websockets. To help migrate the application to cloud you should:**

- A. Redesign the application to use HTTP streaming.
- B. Redesign the application to use distributed sessions instead of websockets.
- C. Do nothing to the application. HTTP(S) load balancing natively supports websocket proxying.
- D. Review websocket encryption requirements with the security team.

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[https://cloud.google.com/load-balancing/docs/https/#websocket\\_proxy\\_support](https://cloud.google.com/load-balancing/docs/https/#websocket_proxy_support)

C - "HTTP(S) Load Balancing has native support for the WebSocket protocol. Backends that use WebSocket to communicate with clients can use the HTTP(S) load balancer as a front end, for scale and availability. The load balancer does not need any additional configuration to proxy WebSocket connections."

D - Irrelevant to the application migration.

A and B - There is nothing inherent about websockets that requires a redesign to run on Google Cloud.

# Solution

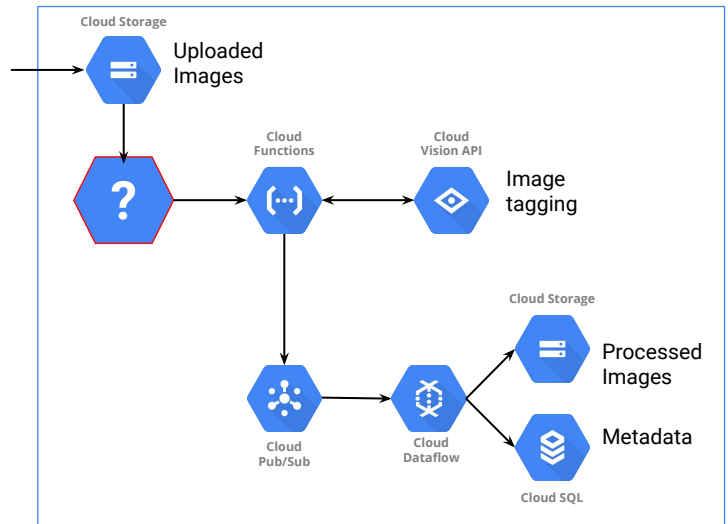
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## Dress4Win is building an image tagging pipeline.

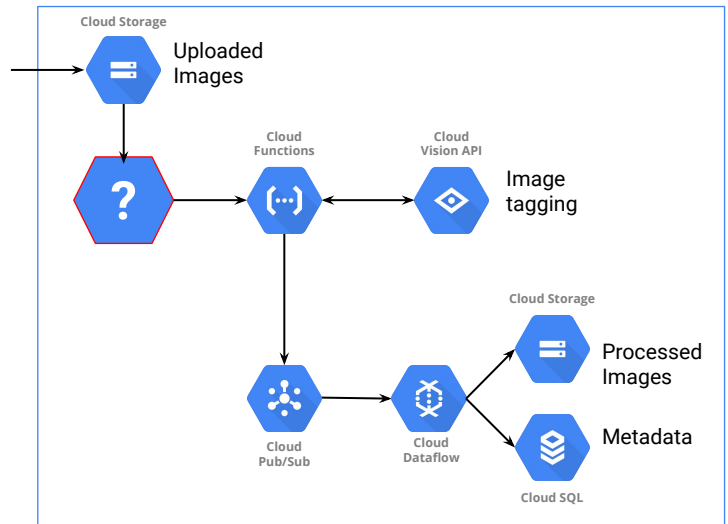
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- C. Cloud Pub/Sub
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- A. Cloud Datastore
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C - Cloud Storage upload events can push Cloud Pub/Sub to trigger a Cloud Function to ingest and process the image.

B - Cloud Dataflow would have nothing to do here but receive an image and call a Cloud Function.

A - Cloud Datastore is not for storing images.

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## Solution

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documentation references

## **How to store data to be accessed once a month and not needed after five years.**

- A. Multi-regional class, lifecycle policy to delete after 5 years.
- B. Multi-regional class, lifecycle policy change to Coldline after 5 years.
- C. Nearline class, lifecycle policy change to Coldline after 5 years.
- D. Nearline class, lifecycle policy to delete after 5 years.

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- C. Nearline class, lifecycle policy change to Coldline after 5 years.
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Access pattern is Nearline. "Not needed" means delete, not archive.

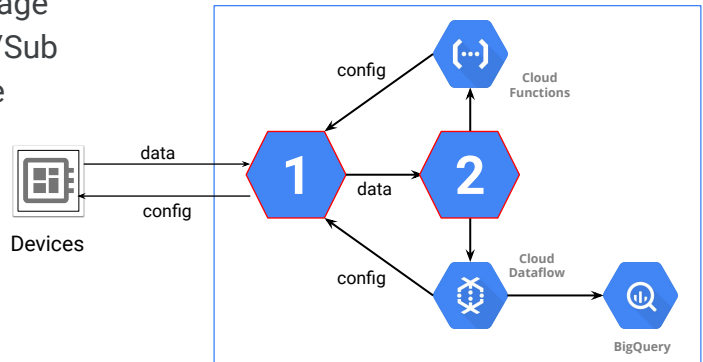
# Solution

D - Access pattern is Nearline. "Not needed" means delete, not archive.

A, B, C - Wrong access pattern or "Coldline" (store) instead of delete.

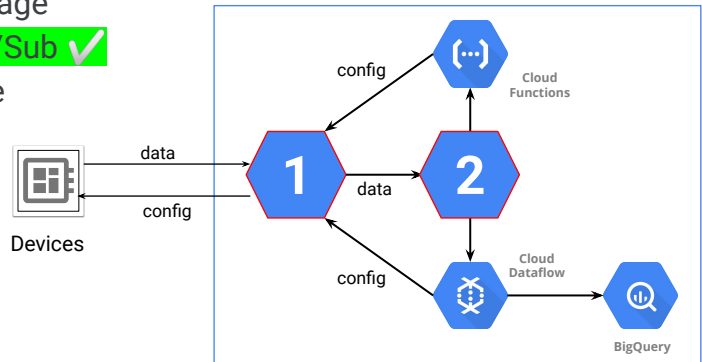
## TerramEarth has a new IoT pipeline. Which services will make this design work?

- A. Cloud IoT Core, Cloud Datastore
- B. Cloud Pub/Sub, Cloud Storage
- C. Cloud IoT Core, Cloud Pub/Sub
- D. App Engine, Cloud IoT Core



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 Google Cloud Platform

<https://cloud.google.com/iot-core/>

<https://cloud.google.com/solutions/iot/> <- Cloud Pub/Sub's role in IoT

C - "Device data captured by Cloud IoT Core gets published to Cloud Pub/Sub"

A - Cloud IoT Core does not publish to other services and it doesn't store data.

B - Cloud Pub/Sub does not do device management.

D - In theory, an App Engine application could duplicate the functions of Cloud IoT Core, but since Cloud IoT Core only publishes to Cloud Pub/Sub, in position 2, it would not communicate with either Cloud Functions or Cloud Dataflow.

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documentation references



**Multi-petabyte database for analysts that only know SQL and must be available 24 x 7.**

- A. Cloud Storage
- B. Cloud SQL
- C. BigQuery
- D. Cloud Datastore

**Which service for a multi-petabyte database for analysts that only know SQL and must be available 24 x 7.**

- A. Cloud Storage
- B. Cloud SQL
- C. BigQuery ✓**
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Google Cloud Platform

C - BigQuery SLA is 99.9%, meeting the uptime requirement, and it has an SQL interface.

A - Cloud Storage has no SQL interface.

B - Cloud SQL has the SLA and SQL, but not the capacity.

D - Cloud Datastore has no SQL interface.

## Solution

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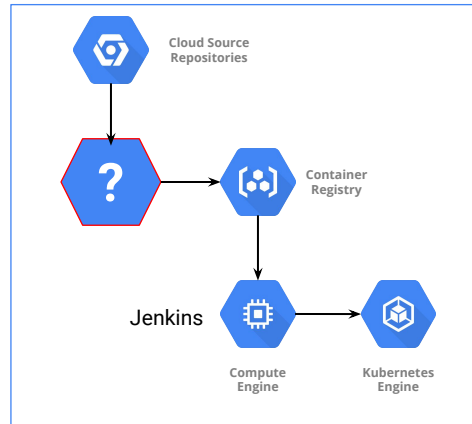
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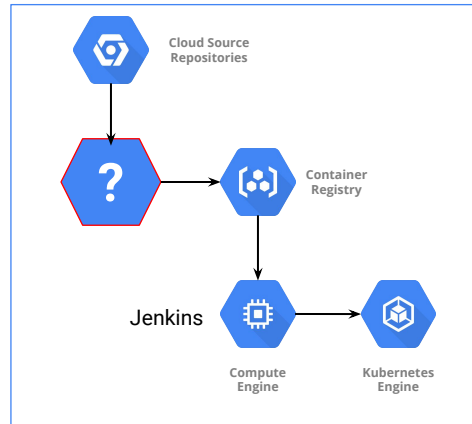
## Which service completes the CI/CD pipeline?

- A. Cloud Pub/Sub
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- C. Cloud Storage
- D. Cloud Dataproc



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B - Container Builder

Container Builder builds docker images from source repositories.

None of the other services build docker images.

# Solution

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Container Builder builds docker images from source repositories.

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documentation references

## **Simply and reliably clone a Linux VM to another project in another region.**

- A. Use Linux dd and netcat to stream the root disk to the new VM.
- B. Snapshot the root disk and select it for the new VM.
- C. Create an image from the root disk with Linux dd, create a disk from the image, and use it in the new VM.
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D - Will work across project and region, and it is a simple and reliable method.

A - incurs network costs and impacts performance of the original VM.

B - Snapshots are bound within the region.

C - dd won't work correctly on a mounted disk.



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## **Dress4Win security has locked out SSH access to production VMs. How can operations manage the VMs?**

- A. Configure a VPN to allow SSH access to VMs.
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- C. Grant operations team access to use Cloud Shell.
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C - The operations team doesn't actually need SSH access to manage VMs. All it needs is Cloud Shell with the Cloud SDK and gcloud tools. Cloud Shell provides all the tools for managing Compute Engine instances. In this case the assumption that SSH access is needed is incorrect.

Business requirement:

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

A - A VPN is a way to connect from remote to the internal IP of an instance. If SSH is blocked everywhere, this work-around won't help.

B - Developing an application that would use the Cloud API would be redundant with the gcloud command line tool.

D - An application that provides temporary access to SSH is basically just violating the security practices.

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documentation references

## What security strategy for PII data on Cloud Storage?

- A. Signed URL with expiration.
- B. Read-only access to users, and default ACL on bucket.
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- D. Public access, random names, and share URLs in confidence.

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C - most restrictive access.

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D - "Security through obscurity" is no security at all.

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**Dress4Win decided to use Cloud SDK tools to deploy to App Engine Flexible. Which requirement does this meet?**

- A. Support failover of the production environment to the cloud during an emergency.
- B. Encrypt data on the wire and at rest.
- C. Use managed services whenever possible.
- D. Identify production services that can migrate to the cloud to save capacity.



Google Cloud Platform



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Google Cloud Platform

C - App Engine Flexible is a managed service.

A - Requires additional components. If it is incomplete technically, then it isn't correct.

B - Requires additional components.

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# Solution

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## Which Dress4Win business requirement can Cloud DNS help satisfy?

- A. Support multiple VPN connections between the production data center and cloud environment.
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Google Cloud Platform

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D - Cloud DNS records can be used to redirect customer traffic from on prem to cloud, thereby implementing the failover switch.

A - Although DNS could be used to share and resolve external IP addresses for VPN, this is not necessary for multiple VPN connections.

B - Cloud DNS does not have anything to do with optimization of performance or building a reproducible environment. Using the reproducible environment, yes, but not building it.

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C - Scaled parity of production? No.



documentation references

## Which platform features of Google Cloud support TerramEarth's business requirements?

- A. Google has many years of experience with containers.
- B. GCP provides automatic discounts with increased usage.
- C. Cloud Machine Learning and BigQuery are designed for petabyte scale.
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Google Cloud Platform

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C - TerramEarth already has 200TB+ of data and is in a growth phase. Therefore they must be concerned that the solution will be supportable as they "undergo the next wave of transformations in our industry". Also, TerramEarth seeks a competitive advantage through "incremental innovations" which can come from data insights using BigQuery and Machine Learning.

B and D -- TerramEarth is not price sensitive. It is more concerned with facing competitive threats.

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documentation references



## How can MountKirk Games meet its scaling requirements while providing insights to investors?

- A. Import MySQL game statistics to BigQuery for provisioning analysis and indicator reporting.
- B. Use Stackdriver custom metrics for autoscaling and reporting.
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B - Stackdriver custom metrics can be crafted to expose specific game activities, which can be useful for autoscaling and provide a more detailed source of indicators for the targeted marketing investors require. Stackdriver is a fully managed service.

### Technical Requirements:

Game Backend - "Dynamically scale up or down based on game activity."

Game Analytics - "Dynamically scale up or down based on game activity."

Game Analytics - "Use only fully managed services."

"...they had problems scaling their application servers."

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

"Our investors want more key performance indicators (KPIs) to evaluate the speed and stability of the game, as well as other metrics that provide deeper insight into usage patterns so we can adapt the game to target users."

A - The current game statistics are not real-time, but loaded into MySQL by ETL, so they cannot be used for autoscaling. Using BigQuery for analysis may provide better insights, but since game activity is disconnected from resource provisioning (there is no feedback loop), the marketing insights might not be valid.

C - Data Studio might be a way to share metrics with investors so they can explore the data themselves. That is nice, but it does not satisfy business or technical requirements or solve any practical problems described in the case. Autoscaling on CPU has a poor correlation to user experience.

D - Network latency is a better measure of user experience for autoscaling than CPU load, but not as good as game activity. And it does not provide detailed metrics that can be used to understand game usage patterns for marketing.

## Solution

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documentation references

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## How to test a risky update to an App Engine application requiring live traffic?

- A. Deploy as default temporarily, then roll it back.
- B. Create a separate isolated test project and onboard users.
- C. Create a second App Engine project, then redirect a subset of users.
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Google Cloud Platform

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D - Deploying a new version, but not as default, is easily reversed. Traffic splitting enables testing with some live traffic, meeting the requirement.

A - Deploying as default moves all traffic to it.

B - Possible, but requires data synchronization and separate traffic splitting. So this is a complicated approach.

C - App Engine services are intended for hosting different service logic. Using different services would require manual configuration of the consumers of services to be aware of the deployment process and manage from the consumer side who is accessing which service. A complicated approach.

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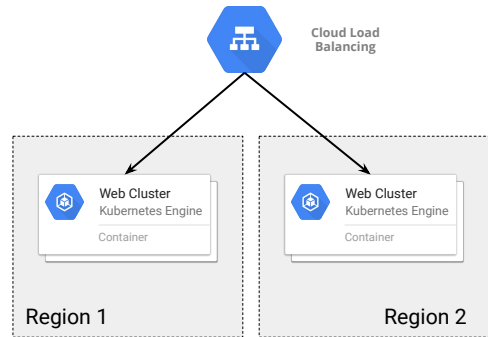
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## How to automatically and simultaneously deploy new code to each cluster?

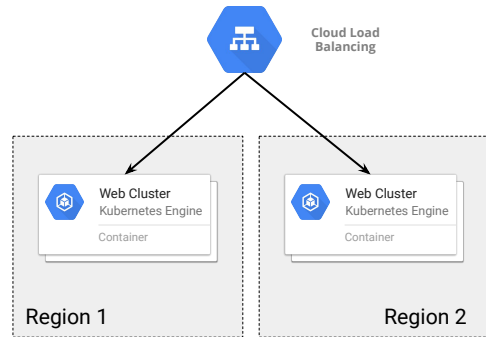
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- A - Jenkins handles automation and simultaneous deployment.
- B - Federated mode handles simultaneous, but not automation.
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- D - Container Builder publishes to Container Registry, not to Clusters.

# Solution

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## **A microservice has intermittent problems that bursts logs. How can you trap it for live debugging?**

- A. Log into machine with microservice and wait for the log messages.
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- C. Configure microservice to send traces to Stackdriver Trace.
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D - A Stackdriver metric can identify a burst of log lines. You can set an alert. Then connect to the machine while the problem is happening.

A - Chances of catching it on one machine is low.

B - Error reporting won't necessarily catch the log lines unless they are stack traces in the proper format. Additionally just because there is a pattern doesn't mean you will know exactly when and where to log in to debug

C - Trace may tell you where time is being spent but won't let you hone in on the exact host that the problem is occurring on because you generally only send samples of traces. There is also no alerting on traces to notify exactly when the problem is happening.

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## **Dress4Win wants penetration security testing that primarily matches an end user perspective.**

- A. Notify Google you are going to run a penetration test.
- B. Deploy scanners in the cloud and test from there.
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- D. Use on prem scanners over public Internet.

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Google Cloud Platform

- D - on prem scanners will approach from outside, and over the public internet is where the users are.
- A - Google doesn't require notification for this.
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D - on prem scanners will approach from outside, and over the public internet is where the users are.

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**A sales company runs weekly resiliency tests of the current build in a separate environment by replaying the last holiday sales load. What can improve resiliency?**

- A. Apply twice the load to the test.
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D - the goal is resiliency -- to see that the application continues to run and "bounces back" after the outage is over. Simulating a zone outage is one way to ensure that the application can really handle the loss of a zone.

A - Applying twice the load doesn't necessarily prove resiliency. That would be to test scale, which might be useful for future growth planning.

B - It is not clear why running the same tests more frequently would help with resilience. It might surface issues a few days earlier but at 7x the cost is it worthwhile?

C - Preemptible instances would reduce the cost of the test, but it doesn't prove that the application is resilient.

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documentation references

**Release failures keep causing rollbacks in a web application. Fixes to QA process reduced rollbacks by 80%. What additional steps can you take?**

- A. Replace the platform's relational database systems with a NoSQL database.
- B. Fragment the monolithic platform into microservices.
- C. Remove the QA environment. Start executing canary releases.
- D. Remove the platform's dependency on relational database systems.



Google Cloud Platform

## Release failures keep causing rollbacks in a web application. Fixes to QA process reduced rollbacks by 80%. What additional steps can you take?

- A. Replace the platform's relational database systems with a NoSQL database.
- B. Fragment the monolithic platform into microservices. ✓**
- C. Remove the QA environment. Start executing canary releases.
- D. Remove the platform's dependency on relational database systems.



<https://www.testingexcellence.com/difference-between-greenblue-deployments-ab-testing-and-canary-releases/>

B - Smaller functional units means smaller releases with less "surface area" for problems to occur. More incremental rollouts. Fewer rollbacks.

C - Canary doesn't replace QA. It should be added. Plus, QA is proven to work.

A - NoSQL database offers no quality advantage over relational databases.

D - There is nothing inherent in a relational database that makes it impact the quality of releases.

# Solution

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# Additional Questions



## Which solution should Dress4Win's real-time trend analysis use in the cloud?

- A. Cloud Dataflow
- B. App Engine
- C. A Hadoop cluster in Compute Engine
- D. Cloud Dataproc

## Which solution should Dress4Win's real-time trend analysis use in the cloud?

- A. Cloud Dataflow
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1) Real-time trend analysis ... refer to the case study to learn this is Hadoop/Spark.

D - a managed services that can run the Hadoop application.

A, B - Dataflow and BigQuery are both "serverless services", not managed services, and therefore won't meet the technical requirement to "Use managed services whenever possible."

C - is not a managed service.

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## **Application parts developed by separate project teams will communicate over RFC1918 addresses.**

- A. Single project, same VPC
- B. Shared VPC, each project a service of the Shared VPC project
- C. Parts communicate using HTTPS
- D. Communicate over global load balancers, one per project



Google Cloud Platform

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- B - each team has their own project but communicates securely over a single RFC1918 address space.
- A - no separation.
- C - Doesn't specify separate projects, therefore doesn't meet business requirements.
- D - external IPs do not conform to address technical requirements.

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**Dress4Win wants data analytics in the cloud. Which option will meet their requirements?**

- A. Run current jobs on Cloud Dataproc.
- B. Migrate critical jobs to BigQuery tables.
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Google Cloud Platform

Business requirements (from case) are:

Prefer managed services.

There is no requirement to migrate to a new technology. -- So B and C are not needed.

D is not a managed service, and they prefer that. Therefore, A.

This is an example where the question cannot be resolved without understanding the business requirements from the case.

"No requirement to move to a new technology" is unstated.



# Solution

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## How can the batch processing component of Dress4Win's application be migrated to cloud "as is"?

- A. It can run on Cloud Dataproc.
- B. It can run in an App Engine Beam Container
- C. It can run in Compute Engine instances.
- D. It can run on Cloud Dataflow.



The case information tells us that the batch processing component of the application is an Apache Beam Pipeline.

This is a natural fit, technically, for Cloud Dataflow, which implements Apache Beam as a managed service.

So it is technically feasible. But it must also meet business requirements.

D - Using Cloud Dataflow reduces application server load, saving capacity and optimizing cloud performance. And it is a managed service.

A - Although Dataproc is a managed service, you can't run an Apache Beam pipeline "as is" on Cloud Dataproc. It would need to be reimplemented.

B and C - it is possible, but in both cases the container and instances, these are not managed services, and there is one that meets the criteria already available.

"Use managed services whenever possible."

"Identify production services that can migrate to cloud to save capacity."

"Analyze and optimize architecture for performance in the cloud."

Batch processing - case tells us - is an Apache Beam pipeline

"They are not sure which components of their architecture they can migrate as is and which components they need to change before migrating them."



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**Dress4Win's hosts social graph data using an in-memory database. How can performance be maintained if this component is migrated?**

- A. Use memcache for App Engine
- B. Cloud Memorystore is a direct managed service replacement for Redis.
- C. Cloud Datastore
- D. Use Cloud Launcher for a memcached instance



Redis - metadata, social graph, caching

<https://cloud.google.com/memorystore/docs/redis/redis-overview>

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

Cloud Datastore is a document store database, not a key-value pair database. Memcache is usually used for request-response patterns, and is offered within App Engine.

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Refer to the case to learn that the in-memory database is redis.

B - Cloud Memorystore is a managed service, so it meets the business requirement, and it is redis, so the performance is the same.

Business requirement: "Analyze and optimize architecture for performance in the cloud."

Technical requirement: "Use managed services whenever possible."

One benefit of Memorystore is that it can be scaled easily.

<https://cloud.google.com/memorystore/docs/redis/scaling-instances>

Business requirement: "Improve business agility and speed of innovation through **rapid provisioning of new resources.**"

Redis - metadata, social graph, caching

<https://cloud.google.com/memorystore/docs/redis/redis-overview>

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

D - memcached is fast, but a simpler service. Scaling would be a manual process and potentially interrupt the application.

C - Cloud Datastore is a document store database. It supports different use cases.

B - Memcache for App Engine is a possible solution, but like memcached it exposes a simpler service than Cloud Memorystore.



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## How can you minimize the cost of storing security video files that are processed repeatedly for 30 days?

- A. Regional class, then move to Coldline after 30 days.
- B. Nearline class, then move to Coldline after 30 days.
- C. Regional class, then move to Nearline after 30 days.
- D. Multi-regional class, then move to Coldline after 30 days.



Google Cloud Platform

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- A - Local usage, then coldline because it is unlikely to be read.
- B - Nearline won't be cost effective because the data is accessed too frequently.
- C - Nearline won't be cost effective because the data will not be accessed that frequently.
- D - Multi-regional is more expensive than Regional, and not needed.

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**Dress4Win security has decided to standardize on AES256 for storage device encryption. Which strategy should be used with Compute Engine instances?**

- A. Select SSDs rather than HDDs to ensure AES256 encryption.
- B. Use the linux dm-crypt tool for whole-disk encryption.
- C. Use Customer Supplied Encryption Keys (CSEK).
- D. Use openssl for AES256 file encryption.



Google Cloud Platform

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- A - Selection of disk type determines the default method for whole-disk encryption. HDDs use AES128 and SSDs use AES256.
- B - This would be redundant with Compute Engine disk encryption.
- C - Who manages the keys has nothing to do with whether it is AES128 or AES256.
- D - File encryption is a different layer. The standard is for device encryption.

<https://cloud.google.com/compute/docs/disks/customer-supplied-encryption>

<https://cloud.google.com/security/encryption-at-rest/default-encryption/>

"In addition to the storage system level encryption described above, in most cases data is also encrypted at the storage device level, with at least AES128 for hard disks (HDD) and AES256 for new solid state drives (SSD), using a separate device-level key (which is different than the key used to encrypt the data at the storage level). As older devices are replaced, solely AES256 will be used for device-level encryption."

# Solution

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## Which Cloud IAM roles for security auditors requiring visibility across all projects

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



Google Cloud Platform



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B - Gives read-only access across the company.  
The other options allow them to make changes.

# Solution

B - Gives read-only access across the company.

A, C, D = The other options allow them to make changes.

## **Which of Dress4Win's requirements will Stackdriver dashboards, metrics, and reporting satisfy?**

- A. Improve security by defining and adhering to a set of security and Identity and Access Management (IAM) best practices for cloud
- B. Encrypt data on the wire and at rest.
- C. Analyze and optimize architecture for performance in the cloud.
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Google Cloud Platform

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C - Stackdriver metrics will help to analyze and optimize performance for the cloud, because it can be used to gather metrics -- and custom metrics if needed to get to specific behavior of the applications being migrated.

Stackdriver does not necessarily improve security, although alerts could be set to identify problem circumstances that could indicate vulnerabilities.

Stackdriver is incidental to VPN connections to on prem. It doesn't have anything to do with encryption processes.

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**A car reservation system has long-running transactions. Which one of the following deployment methods should be avoided?**

- A. Execute canary releases.
- B. Perform A/B testing prior to release.
- C. Introduce a blue-green deployment model.
- D. Introduce a pipeline deployment model.



Google Cloud Platform

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C - Switching the load balancer from pointing at the green "good" environment to the blue "new" environment is a fast way to rollback if there is a problem during release. However, long-running transactions will be disrupted by that switch.

A - Testing the application with a few users before releasing to everyone will detect problems early and confine their impact.

B - Performing testing of features "A" with the feature, "B" without the feature, will detect problems before release.

D - Pipeline deployment - introducing orderly procedures into the QA process can improve the effectiveness of QA.

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## **Implement back-out/rollback for website with 100s of VMs. Site has frequent critical updates.**

- A. Create a Nearline copy of static data in Cloud Storage.
- B. Create a snapshot of each VM prior to update, in case of failure.
- C. Use managed instance groups with the “update-instances” command when starting a rolling update.
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Google Cloud Platform

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C - Allows compute engine to handle updates. Easy management of VMs.

D - Large overhead and chance for version conflicts between DM templates if an old template is changed that running infrastructure relies on.

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## **Last week a region had a 1% failure rate in web tier VMs? How should you respond?**

- A. Monitor the application for a 5% failure rate.
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C - Perform root cause analysis, because you don't know from the information given whether the issue had to do with the Cloud Provider or was in the application or something to do with the interface between the application and cloud resources. The goal of identifying root cause is to prevent future failures, that might include changing procedures.

A - Raising the threshold doesn't help identify the underlying issue.

B - The assumption is that the cloud is unreliable and on prem is more reliable, so it needs to act as a backup. That's a lot of work that might not be needed and still doesn't find the cause.

D - The assumption is that the application is the problem. But a 1% error could be within SLA for some services. It might not be the application at all. It could be an one-time issue. The information doesn't tell us if this is a recurring problem.

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