



**Google**

## **Exam Questions Professional-Data-Engineer**

Google Professional Data Engineer Exam

### NEW QUESTION 1

- (Exam Topic 1)

Your company is migrating their 30-node Apache Hadoop cluster to the cloud. They want to re-use Hadoop jobs they have already created and minimize the management of the cluster as much as possible. They also want to be able to persist data beyond the life of the cluster. What should you do?

- A. Create a Google Cloud Dataflow job to process the data.
- B. Create a Google Cloud Dataproc cluster that uses persistent disks for HDFS.
- C. Create a Hadoop cluster on Google Compute Engine that uses persistent disks.
- D. Create a Cloud Dataproc cluster that uses the Google Cloud Storage connector.
- E. Create a Hadoop cluster on Google Compute Engine that uses Local SSD disks.

**Answer: A**

### NEW QUESTION 2

- (Exam Topic 1)

You have spent a few days loading data from comma-separated values (CSV) files into the Google BigQuery table CLICK\_STREAM. The column DT stores the epoch time of click events. For convenience, you chose a simple schema where every field is treated as the STRING type. Now, you want to compute web session durations of users who visit your site, and you want to change its data type to the TIMESTAMP. You want to minimize the migration effort without making future queries computationally expensive. What should you do?

- A. Delete the table CLICK\_STREAM, and then re-create it such that the column DT is of the TIMESTAMP type.
- B. Reload the data.
- C. Add a column TS of the TIMESTAMP type to the table CLICK\_STREAM, and populate the numeric values from the column TS for each row.
- D. Reference the column TS instead of the column DT from now on.
- E. Create a view CLICK\_STREAM\_V, where strings from the column DT are cast into TIMESTAMP values.
- F. Reference the view CLICK\_STREAM\_V instead of the table CLICK\_STREAM from now on.
- G. Add two columns to the table CLICK\_STREAM: TS of the TIMESTAMP type and IS\_NEW of the BOOLEAN type.
- H. Reload all data in append mode.
- I. For each appended row, set the value of IS\_NEW to true.
- J. For future queries, reference the column TS instead of the column DT, with the WHERE clause ensuring that the value of IS\_NEW must be true.
- K. Construct a query to return every row of the table CLICK\_STREAM, while using the built-in function to cast strings from the column DT into TIMESTAMP values.
- L. Run the query into a destination table NEW\_CLICK\_STREAM, in which the column TS is the TIMESTAMP type.
- M. Reference the table NEW\_CLICK\_STREAM instead of the table CLICK\_STREAM from now on.
- N. In the future, new data is loaded into the table NEW\_CLICK\_STREAM.

**Answer: D**

### NEW QUESTION 3

- (Exam Topic 1)

You want to use a database of information about tissue samples to classify future tissue samples as either normal or mutated. You are evaluating an unsupervised anomaly detection method for classifying the tissue samples. Which two characteristics support this method? (Choose two.)

- A. There are very few occurrences of mutations relative to normal samples.
- B. There are roughly equal occurrences of both normal and mutated samples in the database.
- C. You expect future mutations to have different features from the mutated samples in the database.
- D. You expect future mutations to have similar features to the mutated samples in the database.
- E. You already have labels for which samples are mutated and which are normal in the database.

**Answer: BC**

### NEW QUESTION 4

- (Exam Topic 1)

You want to process payment transactions in a point-of-sale application that will run on Google Cloud Platform. Your user base could grow exponentially, but you do not want to manage infrastructure scaling.

Which Google database service should you use?

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

**Answer: A**

### NEW QUESTION 5

- (Exam Topic 1)

You are working on a sensitive project involving private user data. You have set up a project on Google Cloud Platform to house your work internally. An external consultant is going to assist with coding a complex transformation in a Google Cloud Dataflow pipeline for your project. How should you maintain users' privacy?

- A. Grant the consultant the Viewer role on the project.
- B. Grant the consultant the Cloud Dataflow Developer role on the project.
- C. Create a service account and allow the consultant to log on with it.
- D. Create an anonymized sample of the data for the consultant to work with in a different project.

**Answer: C**

### NEW QUESTION 6

- (Exam Topic 1)

Your company's customer and order databases are often under heavy load. This makes performing analytics against them difficult without harming operations. The databases are in a MySQL cluster, with nightly backups taken using mysqldump. You want to perform analytics with minimal impact on operations. What should you do?

- A. Add a node to the MySQL cluster and build an OLAP cube there.
- B. Use an ETL tool to load the data from MySQL into Google BigQuery.
- C. Connect an on-premises Apache Hadoop cluster to MySQL and perform ETL.
- D. Mount the backups to Google Cloud SQL, and then process the data using Google Cloud Dataproc.

**Answer: C**

#### NEW QUESTION 7

- (Exam Topic 1)

Your company built a TensorFlow neural-network model with a large number of neurons and layers. The model fits well for the training data. However, when tested against new data, it performs poorly. What method can you employ to address this?

- A. Threading
- B. Serialization
- C. Dropout Methods
- D. Dimensionality Reduction

**Answer: C**

#### Explanation:

Reference

<https://medium.com/mlreview/a-simple-deep-learning-model-for-stock-price-prediction-using-tensorflow-30505>

#### NEW QUESTION 8

- (Exam Topic 1)

Your company is performing data preprocessing for a learning algorithm in Google Cloud Dataflow. Numerous data logs are being generated during this step, and the team wants to analyze them. Due to the dynamic nature of the campaign, the data is growing exponentially every hour.

The data scientists have written the following code to read the data for a new key features in the logs. BigQueryIO.Read

```
.named("ReadLogData")
```

```
.from("clouddataflow-readonly:samples.log_data")
```

You want to improve the performance of this data read. What should you do?

- A. Specify the TableReference object in the code.
- B. Use .fromQuery operation to read specific fields from the table.
- C. Use of both the Google BigQuery TableSchema and TableFieldSchema classes.
- D. Call a transform that returns TableRow objects, where each element in the PCollection represents a single row in the table.

**Answer: D**

#### NEW QUESTION 9

- (Exam Topic 1)

You are creating a model to predict housing prices. Due to budget constraints, you must run it on a single resource-constrained virtual machine. Which learning algorithm should you use?

- A. Linear regression
- B. Logistic classification
- C. Recurrent neural network
- D. Feedforward neural network

**Answer: A**

#### NEW QUESTION 10

- (Exam Topic 1)

You are building a model to predict whether or not it will rain on a given day. You have thousands of input features and want to see if you can improve training speed by removing some features while having a minimum effect on model accuracy. What can you do?

- A. Eliminate features that are highly correlated to the output labels.
- B. Combine highly co-dependent features into one representative feature.
- C. Instead of feeding in each feature individually, average their values in batches of 3.
- D. Remove the features that have null values for more than 50% of the training records.

**Answer: B**

#### NEW QUESTION 10

- (Exam Topic 3)

MJTelco needs you to create a schema in Google Bigtable that will allow for the historical analysis of the last 2 years of records. Each record that comes in is sent every 15 minutes, and contains a unique identifier of the device and a data record. The most common query is for all the data for a given device for a given day. Which schema should you use?

- A. Rowkey: date#device\_idColumn data: data\_point
- B. Rowkey: dateColumn data: device\_id, data\_point
- C. Rowkey: device\_idColumn data: date, data\_point
- D. Rowkey: data\_pointColumn data: device\_id, date

E. Rowkey: date#data\_pointColumn data: device\_id

**Answer: D**

#### NEW QUESTION 11

- (Exam Topic 3)

MJTelco is building a custom interface to share data. They have these requirements:

- They need to do aggregations over their petabyte-scale datasets.
- They need to scan specific time range rows with a very fast response time (milliseconds). Which combination of Google Cloud Platform products should you recommend?

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

**Answer: C**

#### NEW QUESTION 16

- (Exam Topic 3)

Given the record streams MJTelco is interested in ingesting per day, they are concerned about the cost of Google BigQuery increasing. MJTelco asks you to provide a design solution. They require a single large data table called tracking\_table. Additionally, they want to minimize the cost of daily queries while performing fine-grained analysis of each day's events. They also want to use streaming ingestion. What should you do?

- A. Create a table called tracking\_table and include a DATE column.
- B. Create a partitioned table called tracking\_table and include a TIMESTAMP column.
- C. Create sharded tables for each day following the pattern tracking\_table\_YYYYMMDD.
- D. Create a table called tracking\_table with a TIMESTAMP column to represent the day.

**Answer: B**

#### NEW QUESTION 19

- (Exam Topic 3)

MJTelco's Google Cloud Dataflow pipeline is now ready to start receiving data from the 50,000 installations. You want to allow Cloud Dataflow to scale its compute power up as required. Which Cloud Dataflow pipeline configuration setting should you update?

- A. The zone
- B. The number of workers
- C. The disk size per worker
- D. The maximum number of workers

**Answer: A**

#### NEW QUESTION 23

- (Exam Topic 3)

You need to compose visualizations for operations teams with the following requirements: Which approach meets the requirements?

- A. Load the data into Google Sheets, use formulas to calculate a metric, and use filters/sorting to show only suboptimal links in a table.
- B. Load the data into Google BigQuery tables, write Google Apps Script that queries the data, calculates the metric, and shows only suboptimal rows in a table in Google Sheets.
- C. Load the data into Google Cloud Datastore tables, write a Google App Engine Application that queries all rows, applies a function to derive the metric, and then renders results in a table using the Google charts and visualization API.
- D. Load the data into Google BigQuery tables, write a Google Data Studio 360 report that connects to your data, calculates a metric, and then uses a filter expression to show only suboptimal rows in a table.

**Answer: C**

#### NEW QUESTION 26

- (Exam Topic 4)

Your company produces 20,000 files every hour. Each data file is formatted as a comma separated values (CSV) file that is less than 4 KB. All files must be ingested on Google Cloud Platform before they can be processed. Your company site has a 200 ms latency to Google Cloud, and your Internet connection bandwidth is limited as 50 Mbps. You currently deploy a secure FTP (SFTP) server on a virtual machine in Google Compute Engine as the data ingestion point. A local SFTP client runs on a dedicated machine to transmit the CSV files as is. The goal is to make reports with data from the previous day available to the executives by 10:00 a.m. each day. This design is barely able to keep up with the current volume, even though the bandwidth utilization is rather low. You are told that due to seasonality, your company expects the number of files to double for the next three months. Which two actions should you take? (choose two.)

- A. Introduce data compression for each file to increase the rate file of file transfer.
- B. Contact your internet service provider (ISP) to increase your maximum bandwidth to at least 100 Mbps.
- C. Redesign the data ingestion process to use gsutil tool to send the CSV files to a storage bucket in parallel.
- D. Assemble 1,000 files into a tape archive (TAR) fil
- E. Transmit the TAR files instead, and disassemble the CSV files in the cloud upon receiving them.
- F. Create an S3-compatible storage endpoint in your network, and use Google Cloud Storage Transfer Service to transfer on-premices data to the designated storage bucket.

**Answer: CE**

### NEW QUESTION 30

- (Exam Topic 4)

You are designing the database schema for a machine learning-based food ordering service that will predict what users want to eat. Here is some of the information you need to store:

- ▶ The user profile: What the user likes and doesn't like to eat
- ▶ The user account information: Name, address, preferred meal times
- ▶ The order information: When orders are made, from where, to whom

The database will be used to store all the transactional data of the product. You want to optimize the data schema. Which Google Cloud Platform product should you use?

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

**Answer: A**

### NEW QUESTION 31

- (Exam Topic 4)

You work for an economic consulting firm that helps companies identify economic trends as they happen. As part of your analysis, you use Google BigQuery to correlate customer data with the average prices of the 100 most common goods sold, including bread, gasoline, milk, and others. The average prices of these goods are updated every 30 minutes. You want to make sure this data stays up to date so you can combine it with other data in BigQuery as cheaply as possible. What should you do?

- A. Load the data every 30 minutes into a new partitioned table in BigQuery.
- B. Store and update the data in a regional Google Cloud Storage bucket and create a federated data source in BigQuery
- C. Store the data in Google Cloud Datastor
- D. Use Google Cloud Dataflow to query BigQuery and combine the data programmatically with the data stored in Cloud Datastore
- E. Store the data in a file in a regional Google Cloud Storage bucke
- F. Use Cloud Dataflow to query BigQuery and combine the data programmatically with the data stored in Google Cloud Storage.

**Answer: A**

### NEW QUESTION 32

- (Exam Topic 4)

Your company is loading comma-separated values (CSV) files into Google BigQuery. The data is fully imported successfully; however, the imported data is not matching byte-to-byte to the source file. What is the most likely cause of this problem?

- A. The CSV data loaded in BigQuery is not flagged as CSV.
- B. The CSV data has invalid rows that were skipped on import.
- C. The CSV data loaded in BigQuery is not using BigQuery's default encoding.
- D. The CSV data has not gone through an ETL phase before loading into BigQuery.

**Answer: B**

### NEW QUESTION 36

- (Exam Topic 4)

Your company has recently grown rapidly and now ingesting data at a significantly higher rate than it was previously. You manage the daily batch MapReduce analytics jobs in Apache Hadoop. However, the recent increase in data has meant the batch jobs are falling behind. You were asked to recommend ways the development team could increase the responsiveness of the analytics without increasing costs. What should you recommend they do?

- A. Rewrite the job in Pig.
- B. Rewrite the job in Apache Spark.
- C. Increase the size of the Hadoop cluster.
- D. Decrease the size of the Hadoop cluster but also rewrite the job in Hive.

**Answer: A**

### NEW QUESTION 39

- (Exam Topic 4)

You work for a manufacturing plant that batches application log files together into a single log file once a day at 2:00 AM. You have written a Google Cloud Dataflow job to process that log file. You need to make sure the log file is processed once per day as inexpensively as possible. What should you do?

- A. Change the processing job to use Google Cloud Dataproc instead.
- B. Manually start the Cloud Dataflow job each morning when you get into the office.
- C. Create a cron job with Google App Engine Cron Service to run the Cloud Dataflow job.
- D. Configure the Cloud Dataflow job as a streaming job so that it processes the log data immediately.

**Answer: C**

### NEW QUESTION 41

- (Exam Topic 4)

You are deploying a new storage system for your mobile application, which is a media streaming service. You decide the best fit is Google Cloud Datastore. You have entities with multiple properties, some of which can take on multiple values. For example, in the entity 'Movie' the property 'actors' and the property 'tags' have multiple values but the property 'date released' does not. A typical query would ask for all movies with actor=<actorname> ordered by date\_released or all movies with tag=Comedy ordered by date\_released. How should you avoid a combinatorial explosion in the number of indexes?

A. Manually configure the index in your index config as follows:

Indexes:

```
-kind: Movie
  Properties:
    -name: actors
    name: date_released
-kind: Movie
  Properties:
    -name: tags
    name: date_released
```

B. Manually configure the index in your index config as follows:

Indexes:

```
-kind: Movie
  Properties:
    -name: actors
    -name: tags
-name: date_published
```

C. Set the following in your entity options: `exclude_from_indexes = 'actors, tags'`

D. Set the following in your entity options: `exclude_from_indexes = 'date_published'`

- A. Option A
- B. Option B.
- C. Option C
- D. Option D

**Answer: A**

#### NEW QUESTION 45

- (Exam Topic 5)

Which TensorFlow function can you use to configure a categorical column if you don't know all of the possible values for that column?

- A. `categorical_column_with_vocabulary_list`
- B. `categorical_column_with_hash_bucket`
- C. `categorical_column_with_unknown_values`
- D. `sparse_column_with_keys`

**Answer: B**

#### Explanation:

If you know the set of all possible feature values of a column and there are only a few of them, you can use `categorical_column_with_vocabulary_list`. Each key in the list will get assigned an auto-incremental ID starting from 0.

What if we don't know the set of possible values in advance? Not a problem. We can use `categorical_column_with_hash_bucket` instead. What will happen is that each possible value in the feature column occupation will be hashed to an integer ID as we encounter them in training.

Reference: <https://www.tensorflow.org/tutorials/wide>

#### NEW QUESTION 49

- (Exam Topic 5)

What are all of the BigQuery operations that Google charges for?

- A. Storage, queries, and streaming inserts
- B. Storage, queries, and loading data from a file
- C. Storage, queries, and exporting data
- D. Queries and streaming inserts

**Answer: A**

#### Explanation:

Google charges for storage, queries, and streaming inserts. Loading data from a file and exporting data are free operations.

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

#### NEW QUESTION 52

- (Exam Topic 5)

What is the HBase Shell for Cloud Bigtable?

- A. The HBase shell is a GUI based interface that performs administrative tasks, such as creating and deleting tables.
- B. The HBase shell is a command-line tool that performs administrative tasks, such as creating and deleting tables.
- C. The HBase shell is a hypervisor based shell that performs administrative tasks, such as creating and deleting new virtualized instances.
- D. The HBase shell is a command-line tool that performs only user account management functions to grant access to Cloud Bigtable instances.

**Answer:** B

**Explanation:**

The HBase shell is a command-line tool that performs administrative tasks, such as creating and deleting tables. The Cloud Bigtable HBase client for Java makes it possible to use the HBase shell to connect to Cloud Bigtable.

Reference: <https://cloud.google.com/bigtable/docs/installing-hbase-shell>

**NEW QUESTION 54**

- (Exam Topic 5)

Which of the following job types are supported by Cloud Dataproc (select 3 answers)?

- A. Hive
- B. Pig
- C. YARN
- D. Spark

**Answer:** ABD

**Explanation:**

Cloud Dataproc provides out-of-the box and end-to-end support for many of the most popular job types, including Spark, Spark SQL, PySpark, MapReduce, Hive, and Pig jobs.

Reference: [https://cloud.google.com/dataproc/docs/resources/faq#what\\_type\\_of\\_jobs\\_can\\_i\\_run](https://cloud.google.com/dataproc/docs/resources/faq#what_type_of_jobs_can_i_run)

**NEW QUESTION 58**

- (Exam Topic 5)

Why do you need to split a machine learning dataset into training data and test data?

- A. So you can try two different sets of features
- B. To make sure your model is generalized for more than just the training data
- C. To allow you to create unit tests in your code
- D. So you can use one dataset for a wide model and one for a deep model

**Answer:** B

**Explanation:**

The flaw with evaluating a predictive model on training data is that it does not inform you on how well the model has generalized to new unseen data. A model that is selected for its accuracy on the training dataset rather than its accuracy on an unseen test dataset is very likely to have lower accuracy on an unseen test dataset. The reason is that the model is not as generalized. It has specialized to the structure in the training dataset. This is called overfitting.

Reference: <https://machinelearningmastery.com/a-simple-intuition-for-overfitting/>

**NEW QUESTION 60**

- (Exam Topic 5)

All Google Cloud Bigtable client requests go through a front-end server they are sent to a Cloud Bigtable node.

- A. before
- B. after
- C. only if
- D. once

**Answer:** A

**Explanation:**

In a Cloud Bigtable architecture all client requests go through a front-end server before they are sent to a Cloud Bigtable node.

The nodes are organized into a Cloud Bigtable cluster, which belongs to a Cloud Bigtable instance, which is a container for the cluster. Each node in the cluster handles a subset of the requests to the cluster.

When additional nodes are added to a cluster, you can increase the number of simultaneous requests that the cluster can handle, as well as the maximum throughput for the entire cluster.

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

**NEW QUESTION 61**

- (Exam Topic 5)

Which of these are examples of a value in a sparse vector? (Select 2 answers.)

- A. [0, 5, 0, 0, 0, 0]
- B. [0, 0, 0, 1, 0, 0, 1]
- C. [0, 1]
- D. [1, 0, 0, 0, 0, 0, 0]

**Answer:** CD

**Explanation:**

Categorical features in linear models are typically translated into a sparse vector in which each possible value has a corresponding index or id. For example, if there are only three possible eye colors you can represent 'eye\_color' as a length 3 vector: 'brown' would become [1, 0, 0], 'blue' would become [0, 1, 0] and 'green' would become [0, 0, 1]. These vectors are called "sparse" because they may be very long, with many zeros, when the set of possible values is very large (such as all English words).

[0, 0, 0, 1, 0, 0, 1] is not a sparse vector because it has two 1s in it. A sparse vector contains only a single 1. [0, 5, 0, 0, 0, 0] is not a sparse vector because it has a 5 in it. Sparse vectors only contain 0s and 1s. Reference: [https://www.tensorflow.org/tutorials/linear#feature\\_columns\\_and\\_transformations](https://www.tensorflow.org/tutorials/linear#feature_columns_and_transformations)

#### NEW QUESTION 65

- (Exam Topic 5)

If you're running a performance test that depends upon Cloud Bigtable, all the choices except one below are recommended steps. Which is NOT a recommended step to follow?

- A. Do not use a production instance.
- B. Run your test for at least 10 minutes.
- C. Before you test, run a heavy pre-test for several minutes.
- D. Use at least 300 GB of data.

**Answer:** A

#### Explanation:

If you're running a performance test that depends upon Cloud Bigtable, be sure to follow these steps as you plan and execute your test:

Use a production instance. A development instance will not give you an accurate sense of how a production instance performs under load.

Use at least 300 GB of data. Cloud Bigtable performs best with 1 TB or more of data. However, 300 GB of data is enough to provide reasonable results in a performance test on a 3-node cluster. On larger clusters, use 100 GB of data per node.

Before you test, run a heavy pre-test for several minutes. This step gives Cloud Bigtable a chance to balance data across your nodes based on the access patterns it observes.

Run your test for at least 10 minutes. This step lets Cloud Bigtable further optimize your data, and it helps ensure that you will test reads from disk as well as cached reads from memory.

Reference: <https://cloud.google.com/bigtable/docs/performance>

#### NEW QUESTION 69

- (Exam Topic 5)

Which of these rules apply when you add preemptible workers to a Dataproc cluster (select 2 answers)?

- A. Preemptible workers cannot use persistent disk.
- B. Preemptible workers cannot store data.
- C. If a preemptible worker is reclaimed, then a replacement worker must be added manually.
- D. A Dataproc cluster cannot have only preemptible workers.

**Answer:** BD

#### Explanation:

The following rules will apply when you use preemptible workers with a Cloud Dataproc cluster: Processing only—Since preemptibles can be reclaimed at any time, preemptible workers do not store data.

Preemptibles added to a Cloud Dataproc cluster only function as processing nodes.

No preemptible-only clusters—To ensure clusters do not lose all workers, Cloud Dataproc cannot create preemptible-only clusters.

Persistent disk size—As a default, all preemptible workers are created with the smaller of 100GB or the primary worker boot disk size. This disk space is used for local caching of data and is not available through HDFS.

The managed group automatically re-adds workers lost due to reclamation as capacity permits. Reference:

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

#### NEW QUESTION 73

- (Exam Topic 5)

When running a pipeline that has a BigQuery source, on your local machine, you continue to get permission denied errors. What could be the reason for that?

- A. Your gcloud does not have access to the BigQuery resources
- B. BigQuery cannot be accessed from local machines
- C. You are missing gcloud on your machine
- D. Pipelines cannot be run locally

**Answer:** A

#### Explanation:

When reading from a Dataflow source or writing to a Dataflow sink using DirectPipelineRunner, the Cloud Platform account that you configured with the gcloud executable will need access to the corresponding source/sink

Reference:

<https://cloud.google.com/dataflow/java-sdk/JavaDoc/com/google/cloud/dataflow/sdk/runners/DirectPipelineRun>

#### NEW QUESTION 76

- (Exam Topic 5)

What Dataflow concept determines when a Window's contents should be output based on certain criteria being met?

- A. Sessions
- B. OutputCriteria
- C. Windows
- D. Triggers

**Answer:** D

**Explanation:**

Triggers control when the elements for a specific key and window are output. As elements arrive, they are put into one or more windows by a Window transform and its associated WindowFn, and then passed to the associated Trigger to determine if the Windows contents should be output.

Reference:

<https://cloud.google.com/dataflow/java-sdk/JavaDoc/com/google/cloud/dataflow/sdk/transforms/windowing/Tri>

**NEW QUESTION 78**

- (Exam Topic 5)

The CUSTOM tier for Cloud Machine Learning Engine allows you to specify the number of which types of cluster nodes?

- A. Workers
- B. Masters, workers, and parameter servers
- C. Workers and parameter servers
- D. Parameter servers

**Answer: C**

**Explanation:**

The CUSTOM tier is not a set tier, but rather enables you to use your own cluster specification. When you use this tier, set values to configure your processing cluster according to these guidelines:

You must set TrainingInput.masterType to specify the type of machine to use for your master node. You may set TrainingInput.workerCount to specify the number of workers to use.

You may set TrainingInput.parameterServerCount to specify the number of parameter servers to use.

You can specify the type of machine for the master node, but you can't specify more than one master node. Reference: [https://cloud.google.com/ml-engine/docs/training-overview#job\\_configuration\\_parameters](https://cloud.google.com/ml-engine/docs/training-overview#job_configuration_parameters)

**NEW QUESTION 83**

- (Exam Topic 5)

How can you get a neural network to learn about relationships between categories in a categorical feature?

- A. Create a multi-hot column
- B. Create a one-hot column
- C. Create a hash bucket
- D. Create an embedding column

**Answer: D**

**Explanation:**

There are two problems with one-hot encoding. First, it has high dimensionality, meaning that instead of having just one value, like a continuous feature, it has many values, or dimensions. This makes computation more time-consuming, especially if a feature has a very large number of categories. The second problem is that it doesn't encode any relationships between the categories. They are completely independent from each other, so the network has no way of knowing which ones are similar to each other.

Both of these problems can be solved by representing a categorical feature with an embedding

column. The idea is that each category has a smaller vector with, let's say, 5 values in it. But unlike a one-hot vector, the values are not usually 0. The values are weights, similar to the weights that are used for basic features in a neural network. The difference is that each category has a set of weights (5 of them in this case).

You can think of each value in the embedding vector as a feature of the category. So, if two categories are very similar to each other, then their embedding vectors should be very similar too.

Reference:

<https://cloudacademy.com/google/introduction-to-google-cloud-machine-learning-engine-course/a-wide-and-dee>

**NEW QUESTION 87**

- (Exam Topic 5)

Which of the following statements is NOT true regarding Bigtable access roles?

- A. Using IAM roles, you cannot give a user access to only one table in a project, rather than all tables in a project.
- B. To give a user access to only one table in a project, grant the user the Bigtable Editor role for that table.
- C. You can configure access control only at the project level.
- D. To give a user access to only one table in a project, you must configure access through your application.

**Answer: B**

**Explanation:**

For Cloud Bigtable, you can configure access control at the project level. For example, you can grant the ability to:

Read from, but not write to, any table within the project.

Read from and write to any table within the project, but not manage instances. Read from and write to any table within the project, and manage instances.

Reference: <https://cloud.google.com/bigtable/docs/access-control>

**NEW QUESTION 91**

- (Exam Topic 5)

Which of these statements about BigQuery caching is true?

- A. By default, a query's results are not cached.
- B. BigQuery caches query results for 48 hours.
- C. Query results are cached even if you specify a destination table.
- D. There is no charge for a query that retrieves its results from cache.

**Answer: D**

**Explanation:**

When query results are retrieved from a cached results table, you are not charged for the query. BigQuery caches query results for 24 hours, not 48 hours. Query results are not cached if you specify a destination table. A query's results are always cached except under certain conditions, such as if you specify a destination table. Reference: <https://cloud.google.com/bigquery/querying-data#query-caching>

**NEW QUESTION 95**

- (Exam Topic 5)

How would you query specific partitions in a BigQuery table?

- A. Use the DAY column in the WHERE clause
- B. Use the EXTRACT(DAY) clause
- C. Use the PARTITIONTIME pseudo-column in the WHERE clause
- D. Use DATE BETWEEN in the WHERE clause

**Answer: C**

**Explanation:**

Partitioned tables include a pseudo column named `_PARTITIONTIME` that contains a date-based timestamp for data loaded into the table. To limit a query to particular partitions (such as Jan 1st and 2nd of 2017), use a clause similar to this:

```
WHERE _PARTITIONTIME BETWEEN TIMESTAMP('2017-01-01') AND TIMESTAMP('2017-01-02')
```

Reference: [https://cloud.google.com/bigquery/docs/partitioned-tables#the\\_partitiontime\\_pseudo\\_column](https://cloud.google.com/bigquery/docs/partitioned-tables#the_partitiontime_pseudo_column)

**NEW QUESTION 96**

- (Exam Topic 5)

Which is not a valid reason for poor Cloud Bigtable performance?

- A. The workload isn't appropriate for Cloud Bigtable.
- B. The table's schema is not designed correctly.
- C. The Cloud Bigtable cluster has too many nodes.
- D. There are issues with the network connection.

**Answer: C**

**Explanation:**

The Cloud Bigtable cluster doesn't have enough nodes. If your Cloud Bigtable cluster is overloaded, adding more nodes can improve performance. Use the monitoring tools to check whether the cluster is overloaded.

Reference: <https://cloud.google.com/bigtable/docs/performance>

**NEW QUESTION 100**

- (Exam Topic 5)

Scaling a Cloud Dataproc cluster typically involves .

- A. increasing or decreasing the number of worker nodes
- B. increasing or decreasing the number of master nodes
- C. moving memory to run more applications on a single node
- D. deleting applications from unused nodes periodically

**Answer: A**

**Explanation:**

After creating a Cloud Dataproc cluster, you can scale the cluster by increasing or decreasing the number of worker nodes in the cluster at any time, even when jobs are running on the cluster. Cloud Dataproc clusters are typically scaled to:

- 1) increase the number of workers to make a job run faster
- 2) decrease the number of workers to save money
- 3) increase the number of nodes to expand available Hadoop Distributed Filesystem (HDFS) storage

Reference: <https://cloud.google.com/dataproc/docs/concepts/scaling-clusters>

**NEW QUESTION 101**

- (Exam Topic 5)

When you store data in Cloud Bigtable, what is the recommended minimum amount of stored data?

- A. 500 TB
- B. 1 GB
- C. 1 TB
- D. 500 GB

**Answer: C**

**Explanation:**

Cloud Bigtable is not a relational database. It does not support SQL queries, joins, or multi-row transactions. It is not a good solution for less than 1 TB of data.

Reference: [https://cloud.google.com/bigtable/docs/overview#title\\_short\\_and\\_other\\_storage\\_options](https://cloud.google.com/bigtable/docs/overview#title_short_and_other_storage_options)

**NEW QUESTION 106**

- (Exam Topic 5)

To give a user read permission for only the first three columns of a table, which access control method would you use?

- A. Primitive role
- B. Predefined role
- C. Authorized view
- D. It's not possible to give access to only the first three columns of a table.

**Answer:** C

**Explanation:**

An authorized view allows you to share query results with particular users and groups without giving them read access to the underlying tables. Authorized views can only be created in a dataset that does not contain the tables queried by the view. When you create an authorized view, you use the view's SQL query to restrict access to only the rows and columns you want the users to see. Reference: <https://cloud.google.com/bigquery/docs/views#authorized-views>

**NEW QUESTION 107**

- (Exam Topic 5)

The Dataflow SDKs have been recently transitioned into which Apache service?

- A. Apache Spark
- B. Apache Hadoop
- C. Apache Kafka
- D. Apache Beam

**Answer:** D

**Explanation:**

Dataflow SDKs are being transitioned to Apache Beam, as per the latest Google directive Reference: <https://cloud.google.com/dataflow/docs/>

**NEW QUESTION 108**

- (Exam Topic 5)

In order to securely transfer web traffic data from your computer's web browser to the Cloud Dataproc cluster you should use a(n) .

- A. VPN connection
- B. Special browser
- C. SSH tunnel
- D. FTP connection

**Answer:** C

**Explanation:**

To connect to the web interfaces, it is recommended to use an SSH tunnel to create a secure connection to the master node.

Reference:

[https://cloud.google.com/dataproc/docs/concepts/cluster-web-interfaces#connecting\\_to\\_the\\_web\\_interfaces](https://cloud.google.com/dataproc/docs/concepts/cluster-web-interfaces#connecting_to_the_web_interfaces)

**NEW QUESTION 110**

- (Exam Topic 5)

Which of the following are feature engineering techniques? (Select 2 answers)

- A. Hidden feature layers
- B. Feature prioritization
- C. Crossed feature columns
- D. Bucketization of a continuous feature

**Answer:** CD

**Explanation:**

Selecting and crafting the right set of feature columns is key to learning an effective model. Bucketization is a process of dividing the entire range of a continuous feature into a set of consecutive

bins/buckets, and then converting the original numerical feature into a bucket ID (as a categorical feature) depending on which bucket that value falls into.

Using each base feature column separately may not be enough to explain the data. To learn the differences between different feature combinations, we can add crossed feature columns to the model.

Reference: [https://www.tensorflow.org/tutorials/wide#selecting\\_and\\_engineering\\_features\\_for\\_the\\_model](https://www.tensorflow.org/tutorials/wide#selecting_and_engineering_features_for_the_model)

**NEW QUESTION 114**

- (Exam Topic 5)

You have a job that you want to cancel. It is a streaming pipeline, and you want to ensure that any data that is in-flight is processed and written to the output. Which of the following commands can you use on the Dataflow monitoring console to stop the pipeline job?

- A. Cancel
- B. Drain
- C. Stop
- D. Finish

**Answer:** B

**Explanation:**

Using the Drain option to stop your job tells the Dataflow service to finish your job in its current state. Your job will immediately stop ingesting new data from input sources, but the Dataflow service will preserve any existing resources (such as worker instances) to finish processing and writing any buffered data in your pipeline.

Reference: <https://cloud.google.com/dataflow/pipelines/stopping-a-pipeline>

#### NEW QUESTION 119

- (Exam Topic 5)

Which of the following IAM roles does your Compute Engine account require to be able to run pipeline jobs?

- A. dataflow.worker
- B. dataflow.compute
- C. dataflow.developer
- D. dataflow.viewer

**Answer:** A

#### Explanation:

The dataflow.worker role provides the permissions necessary for a Compute Engine service account to execute work units for a Dataflow pipeline

Reference: <https://cloud.google.com/dataflow/access-control>

#### NEW QUESTION 123

- (Exam Topic 5)

If a dataset contains rows with individual people and columns for year of birth, country, and income, how many of the columns are continuous and how many are categorical?

- A. 1 continuous and 2 categorical
- B. 3 categorical
- C. 3 continuous
- D. 2 continuous and 1 categorical

**Answer:** D

#### Explanation:

The columns can be grouped into two types—categorical and continuous columns:

A column is called categorical if its value can only be one of the categories in a finite set. For example, the native country of a person (U.S., India, Japan, etc.) or the education level (high school, college, etc.) are categorical columns.

A column is called continuous if its value can be any numerical value in a continuous range. For example, the capital gain of a person (e.g. \$14,084) is a continuous column.

Year of birth and income are continuous columns. Country is a categorical column.

You could use bucketization to turn year of birth and/or income into categorical features, but the raw columns are continuous.

Reference: [https://www.tensorflow.org/tutorials/wide#reading\\_the\\_census\\_data](https://www.tensorflow.org/tutorials/wide#reading_the_census_data)

#### NEW QUESTION 126

- (Exam Topic 5)

Which of the following is NOT a valid use case to select HDD (hard disk drives) as the storage for Google Cloud Bigtable?

- A. You expect to store at least 10 TB of data.
- B. You will mostly run batch workloads with scans and writes, rather than frequently executing random reads of a small number of rows.
- C. You need to integrate with Google BigQuery.
- D. You will not use the data to back a user-facing or latency-sensitive application.

**Answer:** C

#### Explanation:

For example, if you plan to store extensive historical data for a large number of remote-sensing devices and then use the data to generate daily reports, the cost savings for HDD storage may justify the performance tradeoff. On the other hand, if you plan to use the data to display a real-time dashboard, it probably would not make sense to use HDD storage—reads would be much more frequent in this case, and reads are much slower with HDD storage.

Reference: <https://cloud.google.com/bigtable/docs/choosing-ssd-hdd>

#### NEW QUESTION 127

- (Exam Topic 5)

For the best possible performance, what is the recommended zone for your Compute Engine instance and Cloud Bigtable instance?

- A. Have the Compute Engine instance in the furthest zone from the Cloud Bigtable instance.
- B. Have both the Compute Engine instance and the Cloud Bigtable instance to be in different zones.
- C. Have both the Compute Engine instance and the Cloud Bigtable instance to be in the same zone.
- D. Have the Cloud Bigtable instance to be in the same zone as all of the consumers of your data.

**Answer:** C

#### Explanation:

It is recommended to create your Compute Engine instance in the same zone as your Cloud Bigtable instance for the best possible performance,

If it's not possible to create a instance in the same zone, you should create your instance in another zone within the same region. For example, if your Cloud Bigtable instance is located in us-central1-b, you could create your instance in us-central1-f. This change may result in several milliseconds of additional latency for each Cloud Bigtable request.

It is recommended to avoid creating your Compute Engine instance in a different region from

your Cloud Bigtable instance, which can add hundreds of milliseconds of latency to each Cloud Bigtable request.

Reference: <https://cloud.google.com/bigtable/docs/creating-compute-instance>

#### NEW QUESTION 132

- (Exam Topic 5)

The for Cloud Bigtable makes it possible to use Cloud Bigtable in a Cloud Dataflow pipeline.

- A. Cloud Dataflow connector
- B. DataFlow SDK
- C. BigQuery API
- D. BigQuery Data Transfer Service

**Answer:** A

**Explanation:**

The Cloud Dataflow connector for Cloud Bigtable makes it possible to use Cloud Bigtable in a Cloud Dataflow pipeline. You can use the connector for both batch and streaming operations.

Reference: <https://cloud.google.com/bigtable/docs/dataflow-hbase>

**NEW QUESTION 136**

- (Exam Topic 5)

Cloud Dataproc charges you only for what you really use with billing.

- A. month-by-month
- B. minute-by-minute
- C. week-by-week
- D. hour-by-hour

**Answer:** B

**Explanation:**

One of the advantages of Cloud Dataproc is its low cost. Dataproc charges for what you really use with minute-by-minute billing and a low, ten-minute-minimum billing period.

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

**NEW QUESTION 139**

- (Exam Topic 5)

Which action can a Cloud Dataproc Viewer perform?

- A. Submit a job.
- B. Create a cluster.
- C. Delete a cluster.
- D. List the jobs.

**Answer:** D

**Explanation:**

A Cloud Dataproc Viewer is limited in its actions based on its role. A viewer can only list clusters, get cluster details, list jobs, get job details, list operations, and get operation details.

Reference: [https://cloud.google.com/dataproc/docs/concepts/iam#iam\\_roles\\_and\\_cloud\\_dataproc\\_operations\\_summary](https://cloud.google.com/dataproc/docs/concepts/iam#iam_roles_and_cloud_dataproc_operations_summary)

**NEW QUESTION 141**

- (Exam Topic 5)

You are developing a software application using Google's Dataflow SDK, and want to use conditional, for loops and other complex programming structures to create a branching pipeline. Which component will be used for the data processing operation?

- A. PCollection
- B. Transform
- C. Pipeline
- D. Sink API

**Answer:** B

**Explanation:**

In Google Cloud, the Dataflow SDK provides a transform component. It is responsible for the data processing operation. You can use conditional, for loops, and other complex programming structure to create a branching pipeline.

Reference: <https://cloud.google.com/dataflow/model/programming-model>

**NEW QUESTION 143**

- (Exam Topic 5)

Which of the following statements about the Wide & Deep Learning model are true? (Select 2 answers.)

- A. The wide model is used for memorization, while the deep model is used for generalization.
- B. A good use for the wide and deep model is a recommender system.
- C. The wide model is used for generalization, while the deep model is used for memorization.
- D. A good use for the wide and deep model is a small-scale linear regression problem.

**Answer:** AB

**Explanation:**

Can we teach computers to learn like humans do, by combining the power of memorization and generalization? It's not an easy question to answer, but by jointly training a wide linear model (for memorization) alongside a deep neural network (for generalization), one can combine the strengths of both to bring us one step closer. At Google, we call it Wide & Deep Learning. It's useful for generic large-scale regression and classification problems with sparse inputs (categorical

features with a large number of possible feature values), such as recommender systems, search, and ranking problems.  
Reference: <https://research.googleblog.com/2016/06/wide-deep-learning-better-together-with.html>

#### NEW QUESTION 148

- (Exam Topic 5)

When creating a new Cloud Dataproc cluster with the projects.regions.clusters.create operation, these four values are required: project, region, name, and .

- A. zone
- B. node
- C. label
- D. type

**Answer:** A

#### Explanation:

At a minimum, you must specify four values when creating a new cluster with the projects.regions.clusters.create operation:

The project in which the cluster will be created

The region to use

The name of the cluster

The zone in which the cluster will be created

You can specify many more details beyond these minimum requirements. For example, you can

also specify the number of workers, whether preemptible compute should be used, and the network settings.

Reference:

[https://cloud.google.com/dataproc/docs/tutorials/python-library-example#create\\_a\\_new\\_cloud\\_dataproc\\_cluste](https://cloud.google.com/dataproc/docs/tutorials/python-library-example#create_a_new_cloud_dataproc_cluste)

#### NEW QUESTION 152

- (Exam Topic 5)

Which of the following is NOT true about Dataflow pipelines?

- A. Dataflow pipelines are tied to Dataflow, and cannot be run on any other runner
- B. Dataflow pipelines can consume data from other Google Cloud services
- C. Dataflow pipelines can be programmed in Java
- D. Dataflow pipelines use a unified programming model, so can work both with streaming and batch data sources

**Answer:** A

#### Explanation:

Dataflow pipelines can also run on alternate runtimes like Spark and Flink, as they are built using the Apache Beam SDKs

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

#### NEW QUESTION 155

- (Exam Topic 5)

What are two of the characteristics of using online prediction rather than batch prediction?

- A. It is optimized to handle a high volume of data instances in a job and to run more complex models.
- B. Predictions are returned in the response message.
- C. Predictions are written to output files in a Cloud Storage location that you specify.
- D. It is optimized to minimize the latency of serving predictions.

**Answer:** BD

#### Explanation:

Online prediction

Optimized to minimize the latency of serving predictions. Predictions returned in the response message.

Batch prediction

Optimized to handle a high volume of instances in a job and to run more complex models. Predictions written to output files in a Cloud Storage location that you specify.

Reference:

[https://cloud.google.com/ml-engine/docs/prediction-overview#online\\_prediction\\_versus\\_batch\\_prediction](https://cloud.google.com/ml-engine/docs/prediction-overview#online_prediction_versus_batch_prediction)

#### NEW QUESTION 160

- (Exam Topic 5)

You are planning to use Google's Dataflow SDK to analyze customer data such as displayed below. Your project requirement is to extract only the customer name from the data source and then write to an output PCollection.

Tom,555 X street Tim,553 Y street Sam, 111 Z street

Which operation is best suited for the above data processing requirement?

- A. ParDo
- B. Sink API
- C. Source API
- D. Data extraction

**Answer:** A

#### Explanation:

In Google Cloud dataflow SDK, you can use the ParDo to extract only a customer name of each element in your PCollection.

Reference: <https://cloud.google.com/dataflow/model/par-do>

#### NEW QUESTION 162

- (Exam Topic 5)

Cloud Bigtable is a recommended option for storing very large amounts of \_\_\_\_\_ ?

- A. multi-keyed data with very high latency
- B. multi-keyed data with very low latency
- C. single-keyed data with very low latency
- D. single-keyed data with very high latency

**Answer:** C

**Explanation:**

Cloud Bigtable is a sparsely populated table that can scale to billions of rows and thousands of columns, allowing 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.

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

**NEW QUESTION 163**

- (Exam Topic 6)

You have enabled the free integration between Firebase Analytics and Google BigQuery. Firebase now automatically creates a new table daily in BigQuery in the format app\_events\_YYYYMMDD. You want to query all of the tables for the past 30 days in legacy SQL. What should you do?

- A. Use the TABLE\_DATE\_RANGE function
- B. Use the WHERE\_PARTITIONTIME pseudo column
- C. Use WHERE date BETWEEN YYYY-MM-DD AND YYYY-MM-DD
- D. Use SELECT IF.(date >= YYYY-MM-DD AND date <= YYYY-MM-DD

**Answer:** A

**Explanation:**

Reference:

<https://cloud.google.com/blog/products/gcp/using-bigquery-and-firebase-analytics-to-understandyour-mobile-ap>

**NEW QUESTION 164**

- (Exam Topic 6)

You are running a pipeline in Cloud Dataflow that receives messages from a Cloud Pub/Sub topic and writes the results to a BigQuery dataset in the EU. Currently, your pipeline is located in europe-west4 and has a maximum of 3 workers, instance type n1-standard-1. You notice that during peak periods, your pipeline is struggling to process records in a timely fashion, when all 3 workers are at maximum CPU utilization. Which two actions can you take to increase performance of your pipeline? (Choose two.)

- A. Increase the number of max workers
- B. Use a larger instance type for your Cloud Dataflow workers
- C. Change the zone of your Cloud Dataflow pipeline to run in us-central1
- D. Create a temporary table in Cloud Bigtable that will act as a buffer for new dat
- E. Create a new step in your pipeline to write to this table first, and then create a new pipeline to write from Cloud Bigtable to BigQuery
- F. Create a temporary table in Cloud Spanner that will act as a buffer for new dat
- G. Create a new step in your pipeline to write to this table first, and then create a new pipeline to write from Cloud Spanner to BigQuery

**Answer:** BE

**NEW QUESTION 167**

- (Exam Topic 6)

You're training a model to predict housing prices based on an available dataset with real estate properties. Your plan is to train a fully connected neural net, and you've discovered that the dataset contains latitude and longitude of the property. Real estate professionals have told you that the location of the property is highly influential on price, so you'd like to engineer a feature that incorporates this physical dependency.

What should you do?

- A. Provide latitude and longitude as input vectors to your neural net.
- B. Create a numeric column from a feature cross of latitude and longitude.
- C. Create a feature cross of latitude and longitude, bucketize at the minute level and use L1 regularization during optimization.
- D. Create a feature cross of latitude and longitude, bucketize it at the minute level and use L2 regularization during optimization.

**Answer:** B

**Explanation:**

Reference <https://cloud.google.com/bigquery/docs/gis-data>

**NEW QUESTION 169**

- (Exam Topic 6)

Your infrastructure includes a set of YouTube channels. You have been tasked with creating a process for sending the YouTube channel data to Google Cloud for analysis. You want to design a solution that allows your world-wide marketing teams to perform ANSI SQL and other types of analysis on up-to-date YouTube channels log data. How should you set up the log data transfer into Google Cloud?

- A. Use Storage Transfer Service to transfer the offsite backup files to a Cloud Storage Multi-Regional storage bucket as a final destination.
- B. Use Storage Transfer Service to transfer the offsite backup files to a Cloud Storage Regional bucket as a final destination.
- C. Use BigQuery Data Transfer Service to transfer the offsite backup files to a Cloud Storage Multi-Regional storage bucket as a final destination.
- D. Use BigQuery Data Transfer Service to transfer the offsite backup files to a Cloud Storage Regional storage bucket as a final destination.

**Answer:** B

### NEW QUESTION 173

- (Exam Topic 6)

You receive data files in CSV format monthly from a third party. You need to cleanse this data, but every third month the schema of the files changes. Your requirements for implementing these transformations include:

- Executing the transformations on a schedule
- Enabling non-developer analysts to modify transformations
- Providing a graphical tool for designing transformations

What should you do?

- A. Use Cloud Dataprep to build and maintain the transformation recipes, and execute them on a scheduled basis
- B. Load each month's CSV data into BigQuery, and write a SQL query to transform the data to a standard schema
- C. Merge the transformed tables together with a SQL query
- D. Help the analysts write a Cloud Dataflow pipeline in Python to perform the transformation
- E. The Python code should be stored in a revision control system and modified as the incoming data's schema changes
- F. Use Apache Spark on Cloud Dataproc to infer the schema of the CSV file before creating a Dataframe. Then implement the transformations in Spark SQL before writing the data out to Cloud Storage and loading into BigQuery

**Answer: D**

### NEW QUESTION 178

- (Exam Topic 6)

As your organization expands its usage of GCP, many teams have started to create their own projects. Projects are further multiplied to accommodate different stages of deployments and target audiences. Each project requires unique access control configurations. The central IT team needs to have access to all projects. Furthermore, data from Cloud Storage buckets and BigQuery datasets must be shared for use in other projects in an ad hoc way. You want to simplify access control management by minimizing the number of policies. Which two steps should you take? Choose 2 answers.

- A. Use Cloud Deployment Manager to automate access provision.
- B. Introduce resource hierarchy to leverage access control policy inheritance.
- C. Create distinct groups for various teams, and specify groups in Cloud IAM policies.
- D. Only use service accounts when sharing data for Cloud Storage buckets and BigQuery datasets.
- E. For each Cloud Storage bucket or BigQuery dataset, decide which projects need access
- F. Find all the active members who have access to these projects, and create a Cloud IAM policy to grant access to all these users.

**Answer: AC**

### NEW QUESTION 179

- (Exam Topic 6)

Your analytics team wants to build a simple statistical model to determine which customers are most likely to work with your company again, based on a few different metrics. They want to run the model on Apache Spark, using data housed in Google Cloud Storage, and you have recommended using Google Cloud Dataproc to execute this job. Testing has shown that this workload can run in approximately 30 minutes on a 15-node cluster, outputting the results into Google BigQuery. The plan is to run this workload weekly. How should you optimize the cluster for cost?

- A. Migrate the workload to Google Cloud Dataflow
- B. Use pre-emptible virtual machines (VMs) for the cluster
- C. Use a higher-memory node so that the job runs faster
- D. Use SSDs on the worker nodes so that the job can run faster

**Answer: A**

### NEW QUESTION 180

- (Exam Topic 6)

You are designing storage for two relational tables that are part of a 10-TB database on Google Cloud. You want to support transactions that scale horizontally. You also want to optimize data for range queries on nonkey columns. What should you do?

- A. Use Cloud SQL for storage
- B. Add secondary indexes to support query patterns.
- C. Use Cloud SQL for storage
- D. Use Cloud Dataflow to transform data to support query patterns.
- E. Use Cloud Spanner for storage
- F. Add secondary indexes to support query patterns.
- G. Use Cloud Spanner for storage
- H. Use Cloud Dataflow to transform data to support query patterns.

**Answer: D**

#### Explanation:

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

### NEW QUESTION 184

- (Exam Topic 6)

Your company needs to upload their historic data to Cloud Storage. The security rules don't allow access from external IPs to their on-premises resources. After an initial upload, they will add new data from existing on-premises applications every day. What should they do?

- A. Execute gsutil rsync from the on-premises servers.
- B. Use Cloud Dataflow and write the data to Cloud Storage.
- C. Write a job template in Cloud Dataproc to perform the data transfer.
- D. Install an FTP server on a Compute Engine VM to receive the files and move them to Cloud Storage.

**Answer:** B

**NEW QUESTION 186**

- (Exam Topic 6)

Your financial services company is moving to cloud technology and wants to store 50 TB of financial timeseries data in the cloud. This data is updated frequently and new data will be streaming in all the time. Your company also wants to move their existing Apache Hadoop jobs to the cloud to get insights into this data. Which product should they use to store the data?

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

**Answer:** A

**Explanation:**

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

**NEW QUESTION 187**

- (Exam Topic 6)

You are developing an application that uses a recommendation engine on Google Cloud. Your solution should display new videos to customers based on past views. Your solution needs to generate labels for the entities in videos that the customer has viewed. Your design must be able to provide very fast filtering suggestions based on data from other customer preferences on several TB of data. What should you do?

- A. Build and train a complex classification model with Spark MLlib to generate labels and filter the results. Deploy the models using Cloud Datapro
- B. Call the model from your application.
- C. Build and train a classification model with Spark MLlib to generate label
- D. Build and train a second classification model with Spark MLlib to filter results to match customer preference
- E. Deploy the Models using Cloud Datapro
- F. Call the models from your application.
- G. Build an application that calls the Cloud Video Intelligence API to generate label
- H. Store data in Cloud Bigtable, and filter the predicted labels to match the user's viewing history to generate preferences.
- I. Build an application that calls the Cloud Video Intelligence API to generate label
- J. Store data in Cloud SQL, and join and filter the predicted labels to match the user's viewing history to generate preferences.

**Answer:** C

**NEW QUESTION 190**

- (Exam Topic 6)

You operate an IoT pipeline built around Apache Kafka that normally receives around 5000 messages per second. You want to use Google Cloud Platform to create an alert as soon as the moving average over 1 hour drops below 4000 messages per second. What should you do?

- A. Consume the stream of data in Cloud Dataflow using Kafka I
- B. Set a sliding time window of 1 hour every 5 minute
- C. Compute the average when the window closes, and send an alert if the average is less than 4000 messages.
- D. Consume the stream of data in Cloud Dataflow using Kafka I
- E. Set a fixed time window of 1 hour. Compute the average when the window closes, and send an alert if the average is less than 4000 messages.
- F. Use Kafka Connect to link your Kafka message queue to Cloud Pub/Su
- G. Use a Cloud Dataflow template to write your messages from Cloud Pub/Sub to Cloud Bigtabl
- H. Use Cloud Scheduler to run a script every hour that counts the number of rows created in Cloud Bigtable in the last hou
- I. If that number falls below 4000, send an alert.
- J. Use Kafka Connect to link your Kafka message queue to Cloud Pub/Su
- K. Use a Cloud Dataflow template to write your messages from Cloud Pub/Sub to BigQuer
- L. Use Cloud Scheduler to run a script every five minutes that counts the number of rows created in BigQuery in the last hou
- M. If that number falls below 4000, send an alert.

**Answer:** C

**NEW QUESTION 191**

- (Exam Topic 6)

You operate a logistics company, and you want to improve event delivery reliability for vehicle-based sensors. You operate small data centers around the world to capture these events, but leased lines that provide connectivity from your event collection infrastructure to your event processing infrastructure are unreliable, with unpredictable latency. You want to address this issue in the most cost-effective way. What should you do?

- A. Deploy small Kafka clusters in your data centers to buffer events.
- B. Have the data acquisition devices publish data to Cloud Pub/Sub.
- C. Establish a Cloud Interconnect between all remote data centers and Google.
- D. Write a Cloud Dataflow pipeline that aggregates all data in session windows.

**Answer:** A

**NEW QUESTION 196**

- (Exam Topic 6)

You need to move 2 PB of historical data from an on-premises storage appliance to Cloud Storage within six months, and your outbound network capacity is constrained to 20 Mb/sec. How should you migrate this data to Cloud Storage?

- A. Use Transfer Appliance to copy the data to Cloud Storage
- B. Use gsutil cp -J to compress the content being uploaded to Cloud Storage

- C. Create a private URL for the historical data, and then use Storage Transfer Service to copy the data to Cloud Storage
- D. Use trickle or ionice along with gsutil cp to limit the amount of bandwidth gsutil utilizes to less than 20 Mb/sec so it does not interfere with the production traffic

**Answer:** A

#### NEW QUESTION 201

- (Exam Topic 6)

You are a head of BI at a large enterprise company with multiple business units that each have different priorities and budgets. You use on-demand pricing for BigQuery with a quota of 2K concurrent on-demand slots per project. Users at your organization sometimes don't get slots to execute their query and you need to correct this. You'd like to avoid introducing new projects to your account.

What should you do?

- A. Convert your batch BQ queries into interactive BQ queries.
- B. Create an additional project to overcome the 2K on-demand per-project quota.
- C. Switch to flat-rate pricing and establish a hierarchical priority model for your projects.
- D. Increase the amount of concurrent slots per project at the Quotas page at the Cloud Console.

**Answer:** C

#### Explanation:

Reference <https://cloud.google.com/blog/products/gcp/busting-12-myths-about-bigquery>

#### NEW QUESTION 205

- (Exam Topic 6)

You want to automate execution of a multi-step data pipeline running on Google Cloud. The pipeline includes Cloud Dataproc and Cloud Dataflow jobs that have multiple dependencies on each other. You want to use managed services where possible, and the pipeline will run every day. Which tool should you use?

- A. cron
- B. Cloud Composer
- C. Cloud Scheduler
- D. Workflow Templates on Cloud Dataproc

**Answer:** D

#### NEW QUESTION 210

- (Exam Topic 6)

You are designing a data processing pipeline. The pipeline must be able to scale automatically as load increases. Messages must be processed at least once, and must be ordered within windows of 1 hour. How should you design the solution?

- A. Use Apache Kafka for message ingestion and use Cloud Dataproc for streaming analysis.
- B. Use Apache Kafka for message ingestion and use Cloud Dataflow for streaming analysis.
- C. Use Cloud Pub/Sub for message ingestion and Cloud Dataproc for streaming analysis.
- D. Use Cloud Pub/Sub for message ingestion and Cloud Dataflow for streaming analysis.

**Answer:** C

#### NEW QUESTION 211

- (Exam Topic 6)

Your company has a hybrid cloud initiative. You have a complex data pipeline that moves data between cloud provider services and leverages services from each of the cloud providers. Which cloud-native service should you use to orchestrate the entire pipeline?

- A. Cloud Dataflow
- B. Cloud Composer
- C. Cloud Dataprep
- D. Cloud Dataproc

**Answer:** D

#### NEW QUESTION 212

- (Exam Topic 6)

After migrating ETL jobs to run on BigQuery, you need to verify that the output of the migrated jobs is the same as the output of the original. You've loaded a table containing the output of the original job and want to compare the contents with output from the migrated job to show that they are identical. The tables do not contain a primary key column that would enable you to join them together for comparison.

What should you do?

- A. Select random samples from the tables using the RAND() function and compare the samples.
- B. Select random samples from the tables using the HASH() function and compare the samples.
- C. Use a Dataproc cluster and the BigQuery Hadoop connector to read the data from each table and calculate a hash from non-timestamp columns of the table after sortin
- D. Compare the hashes of each table.
- E. Create stratified random samples using the OVER() function and compare equivalent samples from each table.

**Answer:** B

#### NEW QUESTION 216

- (Exam Topic 6)

You plan to deploy Cloud SQL using MySQL. You need to ensure high availability in the event of a zone failure. What should you do?

- A. Create a Cloud SQL instance in one zone, and create a failover replica in another zone within the same region.
- B. Create a Cloud SQL instance in one zone, and create a read replica in another zone within the same region.
- C. Create a Cloud SQL instance in one zone, and configure an external read replica in a zone in a different region.
- D. Create a Cloud SQL instance in a region, and configure automatic backup to a Cloud Storage bucket in the same region.

**Answer: C**

#### NEW QUESTION 219

- (Exam Topic 6)

You are selecting services to write and transform JSON messages from Cloud Pub/Sub to BigQuery for a data pipeline on Google Cloud. You want to minimize service costs. You also want to monitor and accommodate input data volume that will vary in size with minimal manual intervention. What should you do?

- A. Use Cloud Dataproc to run your transformation
- B. Monitor CPU utilization for the cluster
- C. Resize the number of worker nodes in your cluster via the command line.
- D. Use Cloud Dataproc to run your transformation
- E. Use the diagnose command to generate an operational output archive
- F. Locate the bottleneck and adjust cluster resources.
- G. Use Cloud Dataflow to run your transformation
- H. Monitor the job system lag with Stackdriver
- I. Use the default autoscaling setting for worker instances.
- J. Use Cloud Dataflow to run your transformation
- K. Monitor the total execution time for a sampling of jobs
- L. Configure the job to use non-default Compute Engine machine types when needed.

**Answer: B**

#### NEW QUESTION 220

- (Exam Topic 6)

You are designing storage for very large text files for a data pipeline on Google Cloud. You want to support ANSI SQL queries. You also want to support compression and parallel load from the input locations using Google recommended practices. What should you do?

- A. Transform text files to compressed Avro using Cloud Dataflow
- B. Use BigQuery for storage and query.
- C. Transform text files to compressed Avro using Cloud Dataflow
- D. Use Cloud Storage and BigQuery permanent linked tables for query.
- E. Compress text files to gzip using the Grid Computing Tool
- F. Use BigQuery for storage and query.
- G. Compress text files to gzip using the Grid Computing Tool
- H. Use Cloud Storage, and then import into Cloud Bigtable for query.

**Answer: D**

#### NEW QUESTION 223

- (Exam Topic 6)

You operate a database that stores stock trades and an application that retrieves average stock price for a given company over an adjustable window of time. The data is stored in Cloud Bigtable where the datetime of the stock trade is the beginning of the row key. Your application has thousands of concurrent users, and you notice that performance is starting to degrade as more stocks are added. What should you do to improve the performance of your application?

- A. Change the row key syntax in your Cloud Bigtable table to begin with the stock symbol.
- B. Change the row key syntax in your Cloud Bigtable table to begin with a random number per second.
- C. Change the data pipeline to use BigQuery for storing stock trades, and update your application.
- D. Use Cloud Dataflow to write summary of each day's stock trades to an Avro file on Cloud Storage. Update your application to read from Cloud Storage and Cloud Bigtable to compute the responses.

**Answer: A**

#### NEW QUESTION 224

- (Exam Topic 6)

You are managing a Cloud Dataproc cluster. You need to make a job run faster while minimizing costs, without losing work in progress on your clusters. What should you do?

- A. Increase the cluster size with more non-preemptible workers.
- B. Increase the cluster size with preemptible worker nodes, and configure them to forcefully decommission.
- C. Increase the cluster size with preemptible worker nodes, and use Cloud Stackdriver to trigger a script to preserve work.
- D. Increase the cluster size with preemptible worker nodes, and configure them to use graceful decommissioning.

**Answer: D**

#### Explanation:

Reference <https://cloud.google.com/dataproc/docs/concepts/configuring-clusters/flex>

#### NEW QUESTION 225

- (Exam Topic 6)

You are designing an Apache Beam pipeline to enrich data from Cloud Pub/Sub with static reference data from BigQuery. The reference data is small enough to fit in memory on a single worker. The pipeline should write enriched results to BigQuery for analysis. Which job type and transforms should this pipeline use?

- A. Batch job, PubSubIO, side-inputs

- B. Streaming job, PubSubIO, JdbcIO, side-outputs
- C. Streaming job, PubSubIO, BigQueryIO, side-inputs
- D. Streaming job, PubSubIO, BigQueryIO, side-outputs

**Answer:** A

#### NEW QUESTION 229

- (Exam Topic 6)

Your globally distributed auction application allows users to bid on items. Occasionally, users place identical bids at nearly identical times, and different application servers process those bids. Each bid event contains the item, amount, user, and timestamp. You want to collate those bid events into a single location in real time to determine which user bid first. What should you do?

- A. Create a file on a shared file and have the application servers write all bid events to that file
- B. Process the file with Apache Hadoop to identify which user bid first.
- C. Have each application server write the bid events to Cloud Pub/Sub as they occur
- D. Push the events from Cloud Pub/Sub to a custom endpoint that writes the bid event information into Cloud SQL.
- E. Set up a MySQL database for each application server to write bid events into
- F. Periodically query each of those distributed MySQL databases and update a master MySQL database with bid event information.
- G. Have each application server write the bid events to Google Cloud Pub/Sub as they occur
- H. Use a pull subscription to pull the bid events using Google Cloud Dataflow
- I. Give the bid for each item to the user in the bid event that is processed first.

**Answer:** C

#### NEW QUESTION 233

- (Exam Topic 6)

You have historical data covering the last three years in BigQuery and a data pipeline that delivers new data to BigQuery daily. You have noticed that when the Data Science team runs a query filtered on a date column and limited to 30–90 days of data, the query scans the entire table. You also noticed that your bill is increasing more quickly than you expected. You want to resolve the issue as cost-effectively as possible while maintaining the ability to conduct SQL queries. What should you do?

- A. Re-create the tables using DDL
- B. Partition the tables by a column containing a TIMESTAMP or DATE Type.
- C. Recommend that the Data Science team export the table to a CSV file on Cloud Storage and use Cloud Datalab to explore the data by reading the files directly.
- D. Modify your pipeline to maintain the last 30–90 days of data in one table and the longer history in a different table to minimize full table scans over the entire history.
- E. Write an Apache Beam pipeline that creates a BigQuery table per day
- F. Recommend that the Data Science team use wildcards on the table name suffixes to select the data they need.

**Answer:** C

#### NEW QUESTION 235

- (Exam Topic 6)

You work for a shipping company that uses handheld scanners to read shipping labels. Your company has strict data privacy standards that require scanners to only transmit recipients' personally identifiable information (PII) to analytics systems, which violates user privacy rules. You want to quickly build a scalable solution using cloud-native managed services to prevent exposure of PII to the analytics systems. What should you do?

- A. Create an authorized view in BigQuery to restrict access to tables with sensitive data.
- B. Install a third-party data validation tool on Compute Engine virtual machines to check the incoming data for sensitive information.
- C. Use Stackdriver logging to analyze the data passed through the total pipeline to identify transactions that may contain sensitive information.
- D. Build a Cloud Function that reads the topics and makes a call to the Cloud Data Loss Prevention API
- E. Use the tagging and confidence levels to either pass or quarantine the data in a bucket for review.

**Answer:** A

#### NEW QUESTION 240

- (Exam Topic 6)

You have a data pipeline that writes data to Cloud Bigtable using well-designed row keys. You want to monitor your pipeline to determine when to increase the size of your Cloud Bigtable cluster. Which two actions can you take to accomplish this? Choose 2 answers.

- A. Review Key Visualizer metric
- B. Increase the size of the Cloud Bigtable cluster when the Read pressure index is above 100.
- C. Review Key Visualizer metric
- D. Increase the size of the Cloud Bigtable cluster when the Write pressure index is above 100.
- E. Monitor the latency of write operation
- F. Increase the size of the Cloud Bigtable cluster when there is a sustained increase in write latency.
- G. Monitor storage utilization
- H. Increase the size of the Cloud Bigtable cluster when utilization increases above 70% of max capacity.
- I. Monitor latency of read operation
- J. Increase the size of the Cloud Bigtable cluster if read operations take longer than 100 ms.

**Answer:** AC

#### NEW QUESTION 241

- (Exam Topic 6)

You are using Google BigQuery as your data warehouse. Your users report that the following simple query is running very slowly, no matter when they run the query:

```
SELECT country, state, city FROM [myproject:mydataset.mytable] GROUP BY country
```

You check the query plan for the query and see the following output in the Read section of Stage:1:



What is the most likely cause of the delay for this query?

- A. Users are running too many concurrent queries in the system
- B. The [myproject:mydataset.mytable] table has too many partitions
- C. Either the state or the city columns in the [myproject:mydataset.mytable] table have too many NULL values
- D. Most rows in the [myproject:mydataset.mytable] table have the same value in the country column, causing data skew

**Answer:** A

**NEW QUESTION 244**

- (Exam Topic 6)

Your team is working on a binary classification problem. You have trained a support vector machine (SVM) classifier with default parameters, and received an area under the Curve (AUC) of 0.87 on the validation set. You want to increase the AUC of the model. What should you do?

- A. Perform hyperparameter tuning
- B. Train a classifier with deep neural networks, because neural networks would always beat SVMs
- C. Deploy the model and measure the real-world AUC; it's always higher because of generalization
- D. Scale predictions you get out of the model (tune a scaling factor as a hyperparameter) in order to get the highest AUC

**Answer:** D

**NEW QUESTION 248**

- (Exam Topic 6)

You need to create a data pipeline that copies time-series transaction data so that it can be queried from within BigQuery by your data science team for analysis. Every hour, thousands of transactions are updated with a new status. The size of the initial dataset is 1.5 PB, and it will grow by 3 TB per day. The data is heavily structured, and your data science team will build machine learning models based on this data. You want to maximize performance and usability for your data science team. Which two strategies should you adopt? Choose 2 answers.

- A. Denormalize the data as much as possible.
- B. Preserve the structure of the data as much as possible.
- C. Use BigQuery UPDATE to further reduce the size of the dataset.
- D. Develop a data pipeline where status updates are appended to BigQuery instead of updated.
- E. Copy a daily snapshot of transaction data to Cloud Storage and store it as an Avro file
- F. Use BigQuery's support for external data sources to query.

**Answer:** DE

**NEW QUESTION 249**

- (Exam Topic 6)

You work for a manufacturing company that sources up to 750 different components, each from a different supplier. You've collected a labeled dataset that has on average 1000 examples for each unique component. Your team wants to implement an app to help warehouse workers recognize incoming components based on a photo of the component. You want to implement the first working version of this app (as Proof-Of-Concept) within a few working days. What should you do?

- A. Use Cloud Vision AutoML with the existing dataset.
- B. Use Cloud Vision AutoML, but reduce your dataset twice.
- C. Use Cloud Vision API by providing custom labels as recognition hints.
- D. Train your own image recognition model leveraging transfer learning techniques.

**Answer:** A

**NEW QUESTION 252**

- (Exam Topic 6)

You are implementing security best practices on your data pipeline. Currently, you are manually executing jobs as the Project Owner. You want to automate these jobs by taking nightly batch files containing non-public information from Google Cloud Storage, processing them with a Spark Scala job on a Google Cloud Dataproc cluster, and depositing the results into Google BigQuery.

How should you securely run this workload?

- A. Restrict the Google Cloud Storage bucket so only you can see the files
- B. Grant the Project Owner role to a service account, and run the job with it
- C. Use a service account with the ability to read the batch files and to write to BigQuery
- D. Use a user account with the Project Viewer role on the Cloud Dataproc cluster to read the batch files and write to BigQuery

**Answer:** B

**NEW QUESTION 254**

- (Exam Topic 6)

Government regulations in your industry mandate that you have to maintain an auditable record of access to certain types of data. Assuming that all expiring logs will be archived correctly, where should you store data that is subject to that mandate?

- A. Encrypted on Cloud Storage with user-supplied encryption key
- B. A separate decryption key will be given to each authorized user.
- C. In a BigQuery dataset that is viewable only by authorized personnel, with the Data Access log used to provide the auditability.
- D. In Cloud SQL, with separate database user names to each use
- E. The Cloud SQL Admin activity logs will be used to provide the auditability.

F. In a bucket on Cloud Storage that is accessible only by an AppEngine service that collects user information and logs the access before providing a link to the bucket.

**Answer: B**

#### NEW QUESTION 257

- (Exam Topic 6)

You need to set access to BigQuery for different departments within your company. Your solution should comply with the following requirements:

- Each department should have access only to their data.
- Each department will have one or more leads who need to be able to create and update tables and provide them to their team.
- Each department has data analysts who need to be able to query but not modify data.

How should you set access to the data in BigQuery?

- A. Create a dataset for each department
- B. Assign the department leads the role of OWNER, and assign the data analysts the role of WRITER on their dataset.
- C. Create a dataset for each department
- D. Assign the department leads the role of WRITER, and assign the data analysts the role of READER on their dataset.
- E. Create a table for each department
- F. Assign the department leads the role of Owner, and assign the data analysts the role of Editor on the project the table is in.
- G. Create a table for each department
- H. Assign the department leads the role of Editor, and assign the data analysts the role of Viewer on the project the table is in.

**Answer: D**

#### NEW QUESTION 260

- (Exam Topic 6)

You need to create a new transaction table in Cloud Spanner that stores product sales data. You are deciding what to use as a primary key. From a performance perspective, which strategy should you choose?

- A. The current epoch time
- B. A concatenation of the product name and the current epoch time
- C. A random universally unique identifier number (version 4 UUID)
- D. The original order identification number from the sales system, which is a monotonically increasing integer

**Answer: C**

#### NEW QUESTION 265

- (Exam Topic 6)

Your United States-based company has created an application for assessing and responding to user actions. The primary table's data volume grows by 250,000 records per second. Many third parties use your application's APIs to build the functionality into their own frontend applications. Your application's APIs should comply with the following requirements:

- Single global endpoint
  - ANSI SQL support
  - Consistent access to the most up-to-date data
- What should you do?

- A. Implement BigQuery with no region selected for storage or processing.
- B. Implement Cloud Spanner with the leader in North America and read-only replicas in Asia and Europe.
- C. Implement Cloud SQL for PostgreSQL with the master in North America and read replicas in Asia and Europe.
- D. Implement Cloud Bigtable with the primary cluster in North America and secondary clusters in Asia and Europe.

**Answer: B**

#### NEW QUESTION 268

- (Exam Topic 6)

Data Analysts in your company have the Cloud IAM Owner role assigned to them in their projects to allow them to work with multiple GCP products in their projects. Your organization requires that all BigQuery data access logs be retained for 6 months. You need to ensure that only audit personnel in your company can access the data access logs for all projects. What should you do?

- A. Enable data access logs in each Data Analyst's project
- B. Restrict access to Stackdriver Logging via Cloud IAM roles.
- C. Export the data access logs via a project-level export sink to a Cloud Storage bucket in the Data Analysts' project
- D. Restrict access to the Cloud Storage bucket.
- E. Export the data access logs via a project-level export sink to a Cloud Storage bucket in a newly created project for audit log
- F. Restrict access to the project with the exported logs.
- G. Export the data access logs via an aggregated export sink to a Cloud Storage bucket in a newly created project for audit log
- H. Restrict access to the project that contains the exported logs.

**Answer: D**

#### NEW QUESTION 271

- (Exam Topic 6)

You work for a global shipping company. You want to train a model on 40 TB of data to predict which ships in each geographic region are likely to cause delivery delays on any given day. The model will be based on multiple attributes collected from multiple sources. Telemetry data, including location in GeoJSON format, will be pulled from each ship and loaded every hour. You want to have a dashboard that shows how many and which ships are likely to cause delays within a region. You want to use a storage solution that has native functionality for prediction and geospatial processing. Which storage solution should you use?

- A. BigQuery
- B. Cloud Bigtable
- C. Cloud Datastore
- D. Cloud SQL for PostgreSQL

**Answer:** A

#### NEW QUESTION 276

- (Exam Topic 6)

You are training a spam classifier. You notice that you are overfitting the training data. Which three actions can you take to resolve this problem? (Choose three.)

- A. Get more training examples
- B. Reduce the number of training examples
- C. Use a smaller set of features
- D. Use a larger set of features
- E. Increase the regularization parameters
- F. Decrease the regularization parameters

**Answer:** ADF

#### NEW QUESTION 279

- (Exam Topic 6)

You are planning to migrate your current on-premises Apache Hadoop deployment to the cloud. You need to ensure that the deployment is as fault-tolerant and cost-effective as possible for long-running batch jobs. You want to use a managed service. What should you do?

- A. Deploy a Cloud Dataproc cluster
- B. Use a standard persistent disk and 50% preemptible worker
- C. Store data in Cloud Storage, and change references in scripts from hdfs:// to gs://
- D. Deploy a Cloud Dataproc cluster
- E. Use an SSD persistent disk and 50% preemptible worker
- F. Store data in Cloud Storage, and change references in scripts from hdfs:// to gs://
- G. Install Hadoop and Spark on a 10-node Compute Engine instance group with standard instance
- H. Install the Cloud Storage connector, and store the data in Cloud Storage
- I. Change references in scripts from hdfs:// to gs://
- J. Install Hadoop and Spark on a 10-node Compute Engine instance group with preemptible instances. Store data in HDFS
- K. Change references in scripts from hdfs:// to gs://

**Answer:** A

#### NEW QUESTION 280

- (Exam Topic 6)

You need to copy millions of sensitive patient records from a relational database to BigQuery. The total size of the database is 10 TB. You need to design a solution that is secure and time-efficient. What should you do?

- A. Export the records from the database as an Avro file
- B. Upload the file to GCS using gsutil, and then load the Avro file into BigQuery using the BigQuery web UI in the GCP Console.
- C. Export the records from the database as an Avro file
- D. Copy the file onto a Transfer Appliance and send it to Google, and then load the Avro file into BigQuery using the BigQuery web UI in the GCP Console.
- E. Export the records from the database into a CSV file
- F. Create a public URL for the CSV file, and then use Storage Transfer Service to move the file to Cloud Storage
- G. Load the CSV file into BigQuery using the BigQuery web UI in the GCP Console.
- H. Export the records from the database as an Avro file
- I. Create a public URL for the Avro file, and then use Storage Transfer Service to move the file to Cloud Storage
- J. Load the Avro file into BigQuery using the BigQuery web UI in the GCP Console.

**Answer:** A

#### NEW QUESTION 283

- (Exam Topic 6)

You have several Spark jobs that run on a Cloud Dataproc cluster on a schedule. Some of the jobs run in sequence, and some of the jobs run concurrently. You need to automate this process. What should you do?

- A. Create a Cloud Dataproc Workflow Template
- B. Create an initialization action to execute the jobs
- C. Create a Directed Acyclic Graph in Cloud Composer
- D. Create a Bash script that uses the Cloud SDK to create a cluster, execute jobs, and then tear down the cluster

**Answer:** A

#### NEW QUESTION 284

- (Exam Topic 6)

An organization maintains a Google BigQuery dataset that contains tables with user-level data. They want to expose aggregates of this data to other Google Cloud projects, while still controlling access to the user-level data. Additionally, they need to minimize their overall storage cost and ensure the analysis cost for other projects is assigned to those projects. What should they do?

- A. Create and share an authorized view that provides the aggregate results.
- B. Create and share a new dataset and view that provides the aggregate results.
- C. Create and share a new dataset and table that contains the aggregate results.

D. Create dataViewer Identity and Access Management (IAM) roles on the dataset to enable sharing.

**Answer:** D

**Explanation:**

Reference: <https://cloud.google.com/bigquery/docs/access-control>

#### NEW QUESTION 285

- (Exam Topic 6)

Your company receives both batch- and stream-based event data. You want to process the data using Google Cloud Dataflow over a predictable time period. However, you realize that in some instances data can arrive late or out of order. How should you design your Cloud Dataflow pipeline to handle data that is late or out of order?

- A. Set a single global window to capture all the data.
- B. Set sliding windows to capture all the lagged data.
- C. Use watermarks and timestamps to capture the lagged data.
- D. Ensure every datasource type (stream or batch) has a timestamp, and use the timestamps to define the logic for lagged data.

**Answer:** B

#### NEW QUESTION 287

- (Exam Topic 6)

You need to create a near real-time inventory dashboard that reads the main inventory tables in your BigQuery data warehouse. Historical inventory data is stored as inventory balances by item and location. You have several thousand updates to inventory every hour. You want to maximize performance of the dashboard and ensure that the data is accurate. What should you do?

- A. Leverage BigQuery UPDATE statements to update the inventory balances as they are changing.
- B. Partition the inventory balance table by item to reduce the amount of data scanned with each inventory update.
- C. Use the BigQuery streaming the stream changes into a daily inventory movement tabl
- D. Calculate balances in a view that joins it to the historical inventory balance tabl
- E. Update the inventory balance table nightly.
- F. Use the BigQuery bulk loader to batch load inventory changes into a daily inventory movement table. Calculate balances in a view that joins it to the historical inventory balance tabl
- G. Update the inventory balance table nightly.

**Answer:** A

#### NEW QUESTION 291

- (Exam Topic 6)

You are designing a cloud-native historical data processing system to meet the following conditions:

- The data being analyzed is in CSV, Avro, and PDF formats and will be accessed by multiple analysis tools including Cloud Dataproc, BigQuery, and Compute Engine.
- A streaming data pipeline stores new data daily.
- Performance is not a factor in the solution.
- The solution design should maximize availability.

How should you design data storage for this solution?

- A. Create a Cloud Dataproc cluster with high availabilit
- B. Store the data in HDFS, and perform analysis as needed.
- C. Store the data in BigQuer
- D. Access the data using the BigQuery Connector or Cloud Dataproc and Compute Engine.
- E. Store the data in a regional Cloud Storage bucke
- F. Access the bucket directly using Cloud Dataproc, BigQuery, and Compute Engine.
- G. Store the data in a multi-regional Cloud Storage bucke
- H. Access the data directly using Cloud Dataproc, BigQuery, and Compute Engine.

**Answer:** C

#### NEW QUESTION 294

- (Exam Topic 6)

You're using Bigtable for a real-time application, and you have a heavy load that is a mix of read and writes. You've recently identified an additional use case and need to perform hourly an analytical job to calculate certain statistics across the whole database. You need to ensure both the reliability of your production application as well as the analytical workload. What should you do?

- A. Export Bigtable dump to GCS and run your analytical job on top of the exported files.
- B. Add a second cluster to an existing instance with a multi-cluster routing, use live-traffic app profile for your regular workload and batch-analytics profile for the analytics workload.
- C. Add a second cluster to an existing instance with a single-cluster routing, use live-traffic app profile for your regular workload and batch-analytics profile for the analytics workload.
- D. Increase the size of your existing cluster twice and execute your analytics workload on your new resized cluster.

**Answer:** B

#### NEW QUESTION 296

- (Exam Topic 6)

You want to migrate an on-premises Hadoop system to Cloud Dataproc. Hive is the primary tool in use, and the data format is Optimized Row Columnar (ORC). All ORC files have been successfully copied to a Cloud Storage bucket. You need to replicate some data to the cluster's local Hadoop Distributed File System (HDFS) to maximize performance. What are two ways to start using Hive in Cloud Dataproc? (Choose two.)

- A. Run the gsutil utility to transfer all ORC files from the Cloud Storage bucket to HDF
- B. Mount the Hive tables locally.
- C. Run the gsutil utility to transfer all ORC files from the Cloud Storage bucket to any node of the Dataproc cluste
- D. Mount the Hive tables locally.
- E. Run the gsutil utility to transfer all ORC files from the Cloud Storage bucket to the master node of the Dataproc cluste
- F. Then run the Hadoop utility to copy them do HDF
- G. Mount the Hive tables from HDFS.
- H. Leverage Cloud Storage connector for Hadoop to mount the ORC files as external Hive table
- I. Replicate external Hive tables to the native ones.
- J. Load the ORC files into BigQuer
- K. Leverage BigQuery connector for Hadoop to mount the BigQuery tables as external Hive table
- L. Replicate external Hive tables to the native ones.

**Answer:** BC

#### NEW QUESTION 299

- (Exam Topic 6)

Your neural network model is taking days to train. You want to increase the training speed. What can you do?

- A. Subsample your test dataset.
- B. Subsample your training dataset.
- C. Increase the number of input features to your model.
- D. Increase the number of layers in your neural network.

**Answer:** D

#### Explanation:

Reference: <https://towardsdatascience.com/how-to-increase-the-accuracy-of-a-neural-network-9f5d1c6f407d>

#### NEW QUESTION 301

- (Exam Topic 6)

You are working on a niche product in the image recognition domain. Your team has developed a model that is dominated by custom C++ TensorFlow ops your team has implemented. These ops are used inside your main training loop and are performing bulky matrix multiplications. It currently takes up to several days to train a model. You want to decrease this time significantly and keep the cost low by using an accelerator on Google Cloud. What should you do?

- A. Use Cloud TPUs without any additional adjustment to your code.
- B. Use Cloud TPUs after implementing GPU kernel support for your customs ops.
- C. Use Cloud GPUs after implementing GPU kernel support for your customs ops.
- D. Stay on CPUs, and increase the size of the cluster you're training your model on.

**Answer:** B

#### NEW QUESTION 305

- (Exam Topic 6)

You have a petabyte of analytics data and need to design a storage and processing platform for it. You must be able to perform data warehouse-style analytics on the data in Google Cloud and expose the dataset as files for batch analysis tools in other cloud providers. What should you do?

- A. Store and process the entire dataset in BigQuery.
- B. Store and process the entire dataset in Cloud Bigtable.
- C. Store the full dataset in BigQuery, and store a compressed copy of the data in a Cloud Storage bucket.
- D. Store the warm data as files in Cloud Storage, and store the active data in BigQuer
- E. Keep this ratio as 80% warm and 20% active.

**Answer:** D

#### NEW QUESTION 307

- (Exam Topic 6)

The marketing team at your organization provides regular updates of a segment of your customer dataset. The marketing team has given you a CSV with 1 million records that must be updated in BigQuery. When you use the UPDATE statement in BigQuery, you receive a quotaExceeded error. What should you do?

- A. Reduce the number of records updated each day to stay within the BigQuery UPDATE DML statement limit.
- B. Increase the BigQuery UPDATE DML statement limit in the Quota management section of the Google Cloud Platform Console.
- C. Split the source CSV file into smaller CSV files in Cloud Storage to reduce the number of BigQuery UPDATE DML statements per BigQuery job.
- D. Import the new records from the CSV file into a new BigQuery tabl
- E. Create a BigQuery job that merges the new records with the existing records and writes the results to a new BigQuery table.

**Answer:** A

#### NEW QUESTION 308

- (Exam Topic 6)

You work for an advertising company, and you've developed a Spark ML model to predict click-through rates at advertisement blocks. You've been developing everything at your on-premises data center, and now your company is migrating to Google Cloud. Your data center will be migrated to BigQuery. You periodically retrain your Spark ML models, so you need to migrate existing training pipelines to Google Cloud. What should you do?

- A. Use Cloud ML Engine for training existing Spark ML models
- B. Rewrite your models on TensorFlow, and start using Cloud ML Engine
- C. Use Cloud Dataproc for training existing Spark ML models, but start reading data directly from BigQuery
- D. Spin up a Spark cluster on Compute Engine, and train Spark ML models on the data exported from BigQuery

**Answer:** A

#### NEW QUESTION 309

- (Exam Topic 6)

You are creating a new pipeline in Google Cloud to stream IoT data from Cloud Pub/Sub through Cloud Dataflow to BigQuery. While previewing the data, you notice that roughly 2% of the data appears to be corrupt. You need to modify the Cloud Dataflow pipeline to filter out this corrupt data. What should you do?

- A. Add a SideInput that returns a Boolean if the element is corrupt.
- B. Add a ParDo transform in Cloud Dataflow to discard corrupt elements.
- C. Add a Partition transform in Cloud Dataflow to separate valid data from corrupt data.
- D. Add a GroupByKey transform in Cloud Dataflow to group all of the valid data together and discard the rest.

**Answer:** B

#### NEW QUESTION 311

- (Exam Topic 6)

You are migrating your data warehouse to BigQuery. You have migrated all of your data into tables in a dataset. Multiple users from your organization will be using the data. They should only see certain tables based on their team membership. How should you set user permissions?

- A. Assign the users/groups data viewer access at the table level for each table
- B. Create SQL views for each team in the same dataset in which the data resides, and assign the users/groups data viewer access to the SQL views
- C. Create authorized views for each team in the same dataset in which the data resides, and assign the users/groups data viewer access to the authorized views
- D. Create authorized views for each team in datasets created for each team
- E. Assign the authorized views data viewer access to the dataset in which the data reside
- F. Assign the users/groups data viewer access to the datasets in which the authorized views reside

**Answer:** C

#### NEW QUESTION 312

- (Exam Topic 6)

You want to archive data in Cloud Storage. Because some data is very sensitive, you want to use the "Trust No One" (TNO) approach to encrypt your data to prevent the cloud provider staff from decrypting your data. What should you do?

- A. Use `gcloud kms keys create` to create a symmetric key
- B. Then use `gcloud kms encrypt` to encrypt each archival file with the key and unique additional authenticated data (AAD). Use `gsutil cp` to upload each encrypted file to the Cloud Storage bucket, and keep the AAD outside of Google Cloud.
- C. Use `gcloud kms keys create` to create a symmetric key
- D. Then use `gcloud kms encrypt` to encrypt each archival file with the key
- E. Use `gsutil cp` to upload each encrypted file to the Cloud Storage bucket
- F. Manually destroy the key previously used for encryption, and rotate the key once and rotate the key once.
- G. Specify customer-supplied encryption key (CSEK) in the `.boto` configuration file
- H. Use `gsutil cp` to upload each archival file to the Cloud Storage bucket
- I. Save the CSEK in Cloud Memorystore as permanent storage of the secret.
- J. Specify customer-supplied encryption key (CSEK) in the `.boto` configuration file
- K. Use `gsutil cp` to upload each archival file to the Cloud Storage bucket
- L. Save the CSEK in a different project that only the security team can access.

**Answer:** B

#### NEW QUESTION 313

- (Exam Topic 6)

A data scientist has created a BigQuery ML model and asks you to create an ML pipeline to serve predictions. You have a REST API application with the requirement to serve predictions for an individual user ID with latency under 100 milliseconds. You use the following query to generate predictions: `SELECT predicted_label, user_id FROM ML.PREDICT (MODEL 'dataset.model', table user_features)`. How should you create the ML pipeline?

- A. Add a WHERE clause to the query, and grant the BigQuery Data Viewer role to the application service account.
- B. Create an Authorized View with the provided query
- C. Share the dataset that contains the view with the application service account.
- D. Create a Cloud Dataflow pipeline using BigQueryIO to read results from the query
- E. Grant the Dataflow Worker role to the application service account.
- F. Create a Cloud Dataflow pipeline using BigQueryIO to read predictions for all users from the query. Write the results to Cloud Bigtable using BigtableI/O
- G. Grant the Bigtable Reader role to the application service account so that the application can read predictions for individual users from Cloud Bigtable.

**Answer:** D

#### NEW QUESTION 315

- (Exam Topic 6)

You are building a new data pipeline to share data between two different types of applications: jobs generators and job runners. Your solution must scale to accommodate increases in usage and must accommodate the addition of new applications without negatively affecting the performance of existing ones. What should you do?

- A. Create an API using App Engine to receive and send messages to the applications
- B. Use a Cloud Pub/Sub topic to publish jobs, and use subscriptions to execute them

- C. Create a table on Cloud SQL, and insert and delete rows with the job information
- D. Create a table on Cloud Spanner, and insert and delete rows with the job information

**Answer:** A

**NEW QUESTION 317**

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