GCP-ACE- All Questions & Answers – Qwiklabs courses- June-2022

✓ 1. Why might a GCP customer use resources in several regions around the world?

   ○ To improve security

   ✓ To bring their applications closer to users around the world, and for improved fault tolerance

   That is correct.

✓ 2. Why might a GCP customer use resources in several zones within a region?

   ○ For better performance

   ✓ For improved fault tolerance

   Correct. As part of building a fault-tolerant application, you can spread your resources across multiple zones in a region.

✓ 1.　Choose a fundamental characteristic of devices in a virtualized data center.

　　　○　They use less resources than devices in a physical data center.

　　　○　They are more secure.

　　　✓　They are manageable separately from the underlying hardware.

　　　○　They are available from anywhere on the Internet.

Correct!

✓ 2.　Which statement is true about the zones within a region?

　　　○　The zones within a region are never closer to each other than 160 km.

　　　○　Each zone corresponds to a single physical data center.

　　　✓　The zones within a region have fast network connectivity among them.

　　　○　Customers must choose exactly one zone in each region in which to run their resources.

Correct!

✓ 3.   What kind of customer benefits most from billing by the second for
        cloud resources such as virtual machines?

    ○   Customers who create many virtual machines and leave them
         running for months

    ○   Customers who create too few virtual machines to get discounts

    ✓   Customers who create and run many virtual machines

    ○   Customers who create virtual machines running commercially
         licensed operating systems

    Correct!

✓ 4.   Choose fundamental characteristics of cloud computing. Mark all that are correct (4 correct responses).

✓   Resources are available from anywhere over the network

Correct!

☐   Customers are required to commit to multi-year contracts

☐   Providers always dedicate physical resources to each customer

☐   All resources are open-source-based

✓   Customers can scale their resource use up and down

Correct!

✓   Computing resources available on-demand and self-service

Correct!

Correct!

✓   Customers pay only for what they use or reserve

Correct!

✓ 5.   What type of cloud computing service provides raw compute, storage,
        and network, organized in ways that are familiar from physical data
        centers?

        ◯ Platform as a Service

        ◯ Software as a Service

        ✓ Infrastructure as a Service

        ◯ Database as a Service

        Correct!
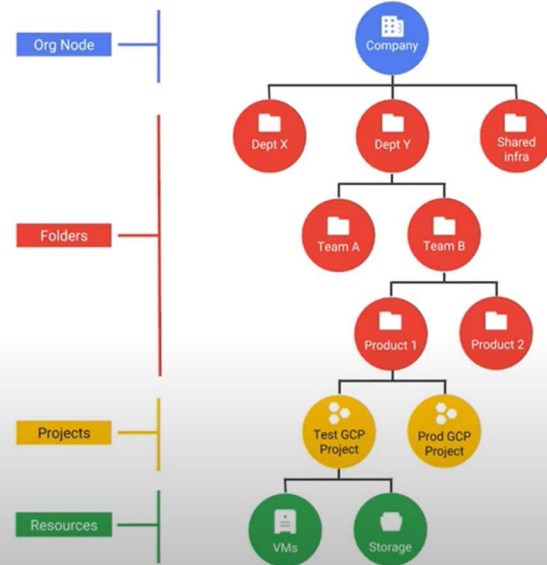
✓ 5.   What type of cloud computing service lets you bind your application
        code to libraries that give access to the infrastructure your application
        needs?

        ◯ Software as a Service

        ✓ Platform as a Service

        ◯ Hybrid cloud

        ◯ Infrastructure as a Service

        ◯ Virtualized data centers

Resource hierarchy levels define trust boundaries

- Group your resources according to your organization structure.
- Levels of the hierarchy provide trust boundaries and resource isolation.

✓ 1. Choose the correct completion: Services and APIs are enabled on a per-_____ basis.

    ◯ Organization

    ◯ Folder

    ✓ Project
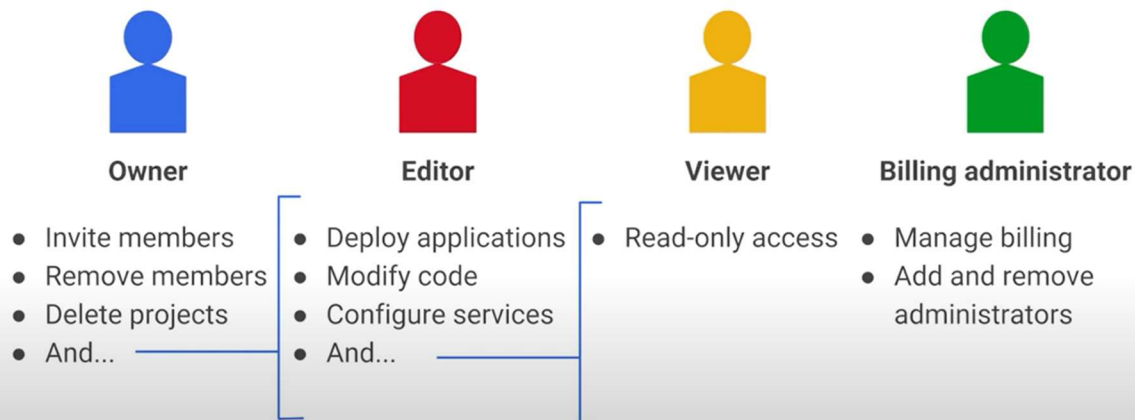
    ◯ Billing account

Correct!

✓ 2.   Your company has two GCP projects, and you want them to share
        policies. What is the less error-prone way to set this up?

        ✓   Place both projects into a folder, and define the policies on the
            folder.

        ○   Duplicate all the policies on one project onto the other.

That's correct!

✓ 3.   True or false: Google manages every aspect of Google Cloud Platform
        customers' security.

        ✓   False

        ○   True

You chose the correct response! Google Cloud Platform manages the
lower layers of the security stack, such as physical security, and gives
customers tools for managing the higher layers.

IAM primitive roles offer fixed, coarse-grained levels of access

Owner
- Invite members
- Remove members
- Delete projects
- And...

Editor
- Deploy applications
- Modify code
- Configure services
- And...

Viewer
- Read-only access

Billing administrator
- Manage billing
- Add and remove administrators

A project can have multiple owners, editors, viewers, and billing administrators.

✓ 1.   Which statement is true about billing for solutions deployed using Cloud Marketplace (formerly known as Cloud Launcher)?

○ After a trial period, each Cloud Marketplace solution assesses a fixed recurring monthly fee.

○ You pay only for the underlying GCP resources you use; Google pays the license fees for commercially licensed software.

✓ You pay only for the underlying GCP resources you use, with the possible addition of extra fees for commercially licensed software.

○ Cloud Marketplace solutions are always free.

✓ 2.   Which of these values is globally unique, permanent, and
        unchangeable, but chosen by the customer?

        ○ The project's billing credit-card number

        ○ The project name

        ✓ The project ID

        ○ The project number

✓ 3.   What is the difference between IAM primitive roles and IAM
        predefined roles?

        ○ Primitive roles can only be granted to single users. Predefined
           roles can be associated with a group.

        ○ Primitive roles only allow viewing, creating, and deleting
           resources. Predefined roles allow any modification.

        ✓ Primitive roles affect all resources in a GCP project. Predefined
           roles apply to a particular service in a project.

        ○ Primitive roles only apply to the owner of the GCP project.
           Predefined roles can be associated with any user.

        ○ Primitive roles are changeable once assigned. Predefined roles
           can never be changed.

✓ 6.   How do GCP customers and Google Cloud Platform divide
        responsibility for security?

        ◯ All aspects of security are Google's responsibility.

        ◯ Google takes care of the higher parts of the stack, and
           customers are responsible for the lower parts.

        ✓ Google takes care of the lower parts of the stack, and
           customers are responsible for the higher parts.

        ◯ All aspects of security are the customer's responsibility.

✓ 7.   *True or False*: All Google Cloud Platform resources are associated
        with a project.

        ◯ False

        ✓ True

✓ 3. Consider a single hierarchy of GCP resources. Which of these situations is
       possible? (Choose all that are correct. Choose 3 responses.)

☐ There are two or more organization nodes

✓ There is an organization node, and there is at least one folder.

Correct!

☐ There is no organization node, but there is at least one folder.

✓ There is no organization node, and there are no folders.

Correct!

✓ There is an organization node, and there are no folders.

Correct!

7.   *True or False*: In Google Cloud IAM: if a policy applied at the project
       level gives you Owner permissions, your access to an individual
       resource in that project might be restricted to View permission if
       someone applies a more restrictive policy directly to that resource.

       ✓   False

       ○   True

       Correct! Policies are a union of those applied on resource itself and
       those inherited from higher levels in the hierarchy. If a parent policy is
       less restrictive, it overrides a more restrictive policy applied on the
       resource. If a parent policy is **more** restrictive, it does not override a
       less restrictive policy applied on the resource. Therefore, access granted
       at a higher level in the hierarchy cannot be taken away by policies
       applied at a lower level in the hierarchy.

✓ 8.   Service accounts are used to provide which of the following? (Choose all
        that are correct. Choose 3 responses.)

    ✓ A way to allow users to act with service account permissions

> Correct!

    ☐ A set of predefined permissions

    ✓ Authentication between Google Cloud Platform services

> Correct!

    ✓ A way to restrict the actions a resource (such as a VM) can perform

> Correct!

✓ 1.   True or false: If you increase the size of a subnet in a custom VPC
         network, the IP addresses of virtual machines already on that subnet
         might be affected.

         ◯   True

         ✓   False

         That's correct. You can dynamically increase the size of a subnet in a
         custom network by expanding the range of IP addresses allocated to it.
         Doing that doesn't affect already configured VMs.

✓ 2.   True or false? In Google Cloud VPCs, subnets have regional scope.

         ✓   True

         ◯   False

         That's correct. VPC subnets can span the zones that make up a region.
         This is beneficial because your solutions can incorporate fault tolerance
         without complicating your network topology.

✓ 1.   What is the main reason customers choose Preemptible VMs?

         ✓   To reduce cost.

         ◯   To improve performance.

         That's correct! The per-hour price of preemptible VMs incorporates a
         substantial discount.

✓ 2.   True or false: You can create Compute Engine virtual machines from
        the command line.

   ○   False

   ✓   True

> Correct! It's advantageous to create virtual machines from a command
> line when you want their configurations to be scripted and repeatable.
> The gcloud command, provided by Google Cloud as part of the GCP
> SDK, can create virtual machines with parameters you specify.

✓ 1.   For which of these interconnect options is a Service Level Agreement
        available?

   ○   Direct Peering

   ○   VPNs with Cloud Router

   ✓   Dedicated Interconnect

   ○   Carrier Peering

> Correct!

✓ 2.   A GCP customer wants to load-balance traffic among the back-end
        VMs that form part of a multi-tier application. Which load-balancing
        option should this customer choose?

        ○ The global SSL proxy

        ○ The global HTTP(S) load balancer

        ✓ The regional internal load balancer

        ○ The regional load balancer

        ○ The global TCP proxy

✓ 3.   Which statement is true about Google VPC networks and subnets?

        ○ Networks are regional; subnets are zonal

        ○ Networks and subnets are global

        ✓ Networks are global; subnets are regional

        ○ Networks are global; subnets are zonal

✓ 4.   How do Compute Engine customers choose between big VMs and
        many VMs?

        ○ Use big VMs for fault tolerance and elasticity; use many VMs for
           in-memory databases and CPU-intensive analytics

        ✓ Use big VMs for in-memory databases and CPU-intensive
           analytics; use many VMs for fault tolerance and elasticity

✓ 6.   Choose an application that would be suitable for running in a
        Preemptible VM.

        ○ An interactive website

        ○ A batch job that cannot be checkpointed and restarted

        ✓ A batch job that can be checkpointed and restarted

        ○ An online relational database
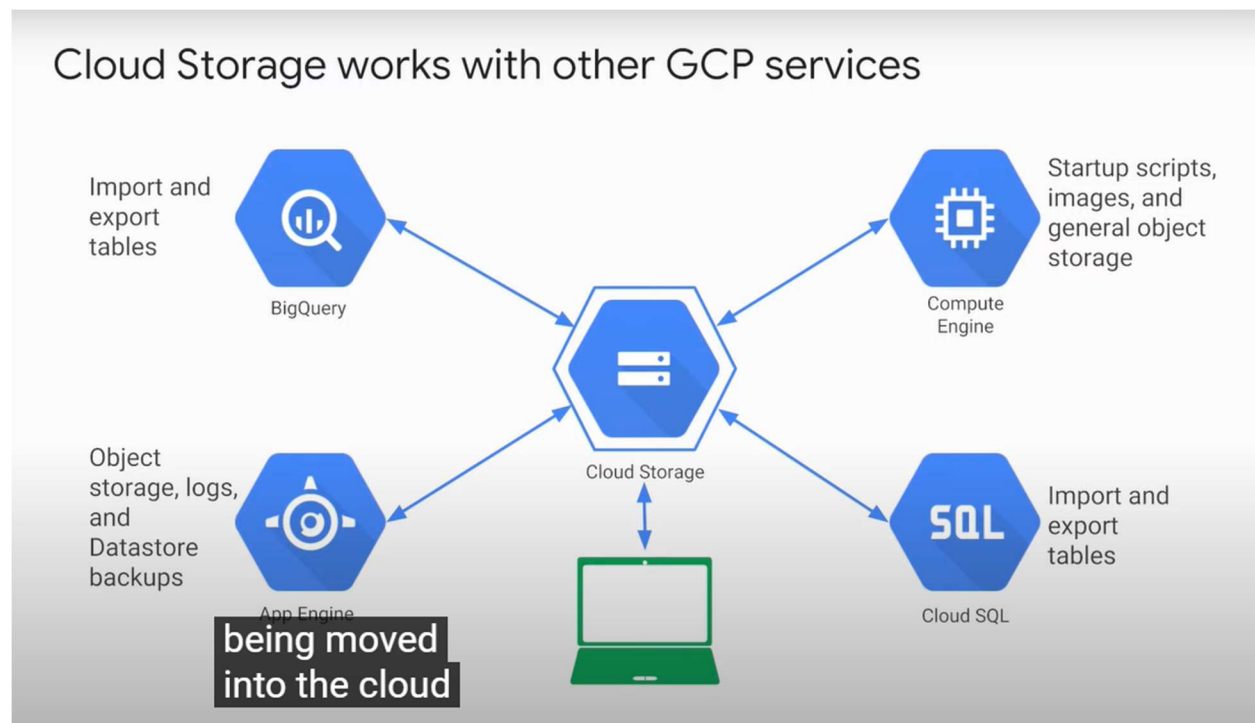
✓ 7.   How do VPC routers and firewalls work?

        ○ They are managed by Google in virtual machines, which
          customers may tune or turn off.

        ○ Customers provision virtual machines and run their routers and
          firewalls in them.

        ✓ They are managed by Google as a built-in feature.

        ○ They are managed by Google in virtual machines, which
          customers may never modify.

∕ 8.   *True or False*: Google Cloud Load Balancing allows you to balance
        HTTP-based traffic across multiple Compute Engine *regions.*

        ○ False

        ✓ True

        Correct! With global Cloud Load Balancing, your application presents a
        single front-end to the world.

Cloud Storage works with other GCP services

Import and export tables

BigQuery

Object storage, logs, and Datastore backups

App Engine

Cloud Storage

being moved into the cloud

Startup scripts, images, and general object storage

Compute Engine

Import and export tables

Cloud SQL

✓ 1.   Why would a customer consider the Coldline storage class?

○   To save money on storing frequently accessed data.

○   To improve security.

✓   To save money on storing infrequently accessed data.

○   To use the Coldline Storage API.

That's correct! Data stored in Coldline is billed at a low monthly storage rate, although a fee is assessed on retrievals.

✓ 2.   True or false: Cloud Storage is well suited to providing the root file
        system of a Linux virtual machine.

        ✓ False

        ◯ True

        > That's correct! Cloud Storage is object storage rather than file storage.
        > Compute Engine virtual machines use Persistent Disk storage to contain
        > their file systems.

✓ 3.   Your Cloud Storage objects live in buckets. Which of these characteristics
        do you define on a per-bucket basis? Choose all that are correct (3 correct
        answers).

        ✓ A geographic location

        > Correct!

        ✓ A default storage class

        > Correct!

        ✓ A globally-unique name

        > Correct!

        ☐ An encryption-at-rest setting (on or off)

        ☐ A default file type for the objects in the bucket

✓ 1.   True or false: Each table in NoSQL databases such as Cloud Bigtable
        has a single schema that is enforced by the database engine itself.

        ✓ False

        ○ True

        Correct! NoSQL databases such as Cloud Bigtable are suitable when all
        items in the database needn't have their integrity checked by a database
        schema. Why not? Maybe you want your database items to contain
        variable fields, or maybe because you simply want your application to
        manage database integrity.

✓ 2.   Some developers think of Cloud Bigtable as a persistent hashtable.
        What does that mean?

        ○   Each item in the database consists of exactly the same fields,
            and can be looked up based on a variety of keys.

        ✓   Each item in the database can be sparsely populated, and is
            looked up with a single key.

        Correct!

✓ 1.   Which database service can scale to higher database sizes?

       ○ Cloud SQL.

       ✓ Cloud Spanner.

> Correct! Cloud Spanner can scale to petabyte database sizes, while Cloud SQL is limited by the size of the database instances you choose. At the time this quiz was created, the maximum was 10,230 GB.

✓ 2.   Which database service presents a MySQL or PostgreSQL interface to clients?

       ✓ Cloud SQL.

       ○ Cloud Spanner.

> Correct! Each Cloud SQL database is configured at creation time for either MySQL or PostgreSQL. Cloud Spanner uses ANSI SQL 2011 with extensions.

✓ 3.   Which database service offers transactional consistency at global scale?

       ○ Cloud SQL.

       ✓ Cloud Spanner.

> Correct! Cloud Spanner offers transactional consistency at global scale.

✓ 1. How are Cloud Datastore and Cloud Bigtable alike? Choose all that are
      correct (2 correct answers)

      ✓ They are both NoSQL databases.

Correct!

      ✓ They are both highly scalable.

Correct!

      ☐ They both offer SQL-like queries.

      ☐ They both have a free daily quota.

✓ 2. True or false: Cloud Datastore databases can span App Engine and
      Compute Engine applications.

      ✓ True.

      ○ False.

Comparing storage options: technical details

	Cloud Datastore	Bigtable	Cloud Storage	Cloud SQL	Cloud Spanner	BigQuery
Type	NoSQL document	NoSQL wide column	Blobstore	Relational SQL for OLTP	Relational SQL for OLTP	Relational SQL for OLAP
Transactions	Yes	Single-row	No	Yes	Yes	No
Complex queries	No	No	No	Yes	Yes	Yes
Capacity	Terabytes+	Petabytes+	Petabytes+	Terabytes	Petabytes	Petabytes+
Unit size	1 MB/entity	~10 MB/cell ~100 MB/row	5 TB/object	Determined by DB engine	10,240 MiB/ row	10 MB/row

Comparing storage options: technical details

	Cloud Datastore	Cloud Bigtable	Cloud Storage	Cloud SQL	Cloud Spanner	BigQuery
Type	NoSQL document	NoSQL wide column	Blobstore	Relational SQL for OLTP	Relational SQL for OLTP	Relational SQL for OLAP
Best for	Semi-structured application data, durable key-value data	"Flat" data, Heavy read/write, events, analytical data	Structured and unstructured binary or object data	Web frameworks, existing applications	Large-scale database applications (> ~2 TB)	Interactive querying, offline analytics
Use cases	Getting started, App Engine applications	AdTech, Financial and IoT data	Images, large media files, backups	User credentials, customer orders	Whenever high I/O, global consistency is needed	Data warehousing

✓ 1.　　Which GCP storage service is often the ingestion point for data being moved into the cloud, and is frequently the long-term storage location for data?

　　　　　　○ Cloud Datastore

　　　　　　✓ Cloud Storage

　　　　　　○ Cloud Spanner

　　　　　　○ Local SSD

Correct!

✓ 2.　　Your application needs a relational database, and it expects to talk to MySQL. Which storage option is the best choice for your application?

　　　　　　○ Cloud Spanner

　　　　　　✓ Cloud SQL

　　　　　　○ Bigtable

　　　　　　○ Cloud Storage

✓ 3.   You are developing an application that transcodes large video files.
        Which storage option is the best choice for your application?

        ○ Google Drive

        ✓ Cloud Storage

        ○ Cloud Spanner

        ○ Cloud Datastore

✓ 4.   Your application needs to store data with strong transactional
        consistency, and you want seamless scaling up. Which storage option
        is the best choice for your application?

        ○ Cloud SQL

        ✓ Cloud Spanner

        ○ Cloud Storage

        ○ Cloud Datastore

✓ 7.   You are building a small application. If possible, you'd like this
        application's data storage to be at no additional charge. Which service
        has a free daily quota, separate from any free trials?

        ○ Cloud Spanner

        ✓ Cloud Datastore

        ○ Cloud SQL

        ○ Bigtable

✓ 2. How do the Nearline and Coldline storage classes differ from Multi-regional and Regional? Choose all that are correct (2 responses).

☐ Nearline and Coldline use a differently-architected API.

☐ Data in Nearline and Coldline is not retrievable immediately.

✓ Nearline and Coldline assess lower storage fees.

Correct!

✓ Nearline and Coldline assess additional retrieval fees.

Correct!

☐ Nearline and Coldline have lower durability.

✓ 4. Which statement is true about objects in Cloud Storage?

○ They are immutable, and versioned by default.

○ They are immutable unless you turn on versioning.

✓ They are immutable, and new versions overwrite old unless you turn on versioning.

○ They can be edited in place.

✓ 7.   You manufacture devices with sensors and need to stream huge
        amounts of data from these devices to a storage option in the cloud.
        Which Google Cloud Platform storage option is the best choice for
        your application?

        ◯ BigQuery

        ✓ Cloud Bigtable

        ◯ Cloud Spanner

        ◯ Cloud Datastore

✓ 1.   Containers are loosely coupled to their environments. What does that
        mean? Choose all the statements that are true. (3 correct answers)

        ✓ Deploying a containerized application consumes less resources and
           is less error-prone than deploying an application in virtual machines.

        Correct!

        ✓ Containers abstract away unimportant details of their environments.

        Correct!

        ☐ Containers don't require any particular runtime binary.

        ✓ Containers are easy to move around.

        Correct!

        ☐ Containers package your application into equally sized
           components.

✓ 2.   True or false: each container has its own instance of an operating
        system.

        ◯   True

        ✓   False.

> Correct! Containers start much faster than virtual machines and use
> fewer resources, because each container does not have its own
> instance of the operating system.

✓ 1.   What is a Kubernetes cluster?

        ✓   A group of machines where Kubernetes can schedule workloads

        ◯   A group of containers that provide high availability for
            applications

> That's correct. A Kubernetes cluster is a group of machines where
> Kubernetes can schedule containers in pods. The machines in the
> cluster are called "nodes."

✓ 2.   What is a Kubernetes pod?

        ✓   A group of containers

        ◯   A group of nodes

        ◯   A group of clusters

> That's correct. In Kubernetes, a group of one or more containers is
> called a pod. Containers in a pod are deployed together. They are
> started, stopped, and replicated as a group. The simplest workload that
> Kubernetes can deploy is a pod that consists only of a single container.

✓ 1.   Where do the resources used to build Kubernetes Engine clusters
        come from?

        ○   Bare-metal servers

        ○   App Engine

        ✓   Compute Engine

        Correct! Because the resources used to build Kubernetes Engine
        clusters come from Compute Engine, Kubernetes Engine gets to take
        advantage of Compute Engine's and Google VPC's capabilities.

✓ 2.   True or false: Google keeps Kubernetes Engine refreshed with
        successive versions of Kubernetes.

        ○   False.

        ✓   True.

        That's correct! The Kubernetes Engine team periodically performs
        automatic upgrades of your cluster master to newer stable versions of
        Kubernetes, and you can enable automatic node upgrades too.

✓ 1. Identify two reasons for deploying applications using containers. (Choose 2 responses.)

☐ Tight coupling between applications and operating systems

✓ Consistency across development, testing, production environments

Correct!

✓ Simpler to migrate workloads

Correct!

☐ No need to allocate resources in which to run containers

✓ 3. Does Google Cloud Platform offer its own tool for building containers (other than the ordinary docker command)?

✓ Yes; the GCP-provided tool is an option, but customers may choose not use it.

◯ No; all customers use the ordinary docker command.

◯ Yes. Kubernetes Engine customers must use the GCP-provided tool.

✓ 4. In Kubernetes, what does "pod" refer to?

◯ A group of clusters that work together

✓ A group of containers that work together

◯ A popular management subsystem

◯ A popular logging subsystem

✓ 5.   Where do your Kubernetes Engine workloads run?

    ⭕ In clusters that are built into GCP, not separately manageable

    ✓ In clusters built from Compute Engine virtual machines

    ⭕ In clusters implemented using Cloud Functions

    ⭕ In clusters implemented using App Engine

✓ 6.   *True or False:* Google Cloud Platform provides a secure, high-speed
        container image storage service for use with Kubernetes Engine.

    ⭕ False

    ✓ True

✓ 1.   True or false: App Engine is a better choice for a web application than
        for long-running batch processing.

    ⭕ False.

    ✓ True.

> That's correct! App Engine will scale your application automatically in
> response to the amount of traffic it receives. That's why App Engine is
> especially suited for applications where the workload is highly variable,
> like a web application.

✓ 2.   True or false: App Engine just runs applications; it doesn't offer any
       services to the applications it runs.

   ✓   False.

   ◯   True.

> That's correct! App Engine offers NoSQL databases, in-memory caching,
> load balancing, health checks, logging, and user authentication to
> applications running in it.

Comparing the App Engine environments

	Standard Environment	Flexible Environment
Instance startup	Milliseconds	Minutes
SSH access	No	Yes (although not by default)
Write to local disk	No	Yes (but writes are ephemeral)
Support for 3rd-party binaries	No	Yes
Network access	Via App Engine services	Yes
Pricing model	After free daily use, pay per instance class, with automatic shutdown	Pay for resource allocation per hour; no automatic shutdown

Deploying Apps: Kubernetes Engine vs App Engine

	Kubernetes Engine	**App Engine Flexible**	**App Engine Standard**
Language support	Any	Any	Java, Python, Go, PHP
Service model	Hybrid	PaaS	PaaS
Primary use case	Container-based workloads	Web and mobile applications, container-based workloads	Web and mobile applications

← Toward managed infrastructure   Toward dynamic infrastructure →

✓ 1. Which of these criteria would make you choose App Engine Flexible Environment, rather than Standard Environment, for your application? Choose all that are correct (2 correct responses).

    ✓ Wider range of choices for application language

> That's correct! At the time of this writing, App Engine Standard Environment supports Java, Python, PHP, and Go, but in the Flexible Environment, you upload your own runtime to run code in a language of your choice.

    ☐ Finer-grained scaling

    ☐ Daily free usage quota

    ✓ Ability to ssh in

> That's correct. App Engine Flexible Environment lets you ssh into the virtual machines in which your application runs.

✓ 2.   True or false: App Engine Flexible Environment applications let their
       owners control the geographic region where they run.

       ✓ True.

       ◯ False.

✓ 2.   Name 3 advantages of using the App Engine Standard Environment over
       App Engine Flexible. Choose all that are true (3 correct answers).

       ☐ You can choose any programming language

       ✓ Billing can drop to zero if your application is idle

       Correct!

       ✓ Scaling is finer-grained

       Correct!

       ✓ Google provides and maintains runtime binaries

       Correct!

       ☐ You can install third-party binaries

✓ 3.   Name 3 advantages of using the App Engine Flexible Environment over
       App Engine Standard. Choose all that are true (3 correct answers).

   ✓   You can SSH in to your application

   Correct!

   ✓   You can install third-party binaries

   Correct!

   ☐   Google provides automatic in-place security patches

   ✓   Your application can write to local disk

   Correct!

   ☐   Your application can execute code in background threads

✓ 4.   You want to gradually decompose a pre-existing monolithic
       application, not implemented in GCP, into microservices. Which GCP
       service should you choose?

   ✓   Apigee Edge

   ○   Cloud Endpoints

✓ 5.   You want to support developers who are building services in GCP
        through API logging and monitoring. Which GCP service should you
        choose?

        ◯   Apigee Edge

        ✓   Cloud Endpoints

✓ 6.   You want to do business analytics and billing on a customer-facing
        API. Which GCP service should you choose?

        ◯   Cloud Endpoints

        ✓   Apigee Edge

        Correct!

✓ 1. Which statements are true about App Engine? Choose all that are true (2 correct answers).

☐   App Engine requires you to supply or code your own application load balancing and logging services.

✓   It is possible for an App Engine application's daily billing to drop to zero.

Correct!

☐   App Engine charges you based on the resources you pre-allocate rather than based on the resources you use.

✓   App Engine manages the hardware and networking infrastructure required to run your code.

Correct!

☐   Developers who write for App Engine do not need to code their applications in any particular way to use the service.

✓ 1.   Why would a developer choose to store source code in Cloud Source
       Repositories? Choose all the answers that are correct (2 correct answers).

   ✓   To keep code private to a GCP project

   That's correct! Cloud Source Repositories integrates with Google Cloud
   IAM.

   ☐   To have total control over the hosting infrastructure

   ✓   To reduce work

   That's right! Cloud Source Repositories manages the hosting
   infrastructure for you.

✓ 1.   What is the advantage of putting event-driven components of your
       application into Cloud Functions?

   ○   Cloud Functions means that processing always happens free of
       charge.

   ✓   Cloud Functions handles scaling these components seamlessly.

   Correct! Your code executes whenever an event triggers it, no matter
   whether it happens rarely or many times per second. That means you
   don't have to provision compute resources to handle these operations.

✓ 2. Which statements are true about Stackdriver Logging? Choose all that are true (2 statements)

☐ Stackdriver Logging lets you define uptime checks.

☐ Stackdriver Logging requires that you store your logs in BigQuery or Cloud Storage.

✓ Stackdriver Logging lets you view logs from your applications, and filter and search on them.

Correct!

✓ Stackdriver Logging lets you define metrics based on your logs.

Correct!

☐ Stackdriver Logging requires the use of a third-party monitoring agent.

✓ 3.   Why might a GCP customer choose to use Deployment Manager?

○ Deployment Manager enforces maximum resource utilization and spending limits on your GCP resources.

○ Deployment Manager is an infrastructure management system for Kubernetes pods.

✓ Deployment Manager is an infrastructure management system for GCP resources.

○ Deployment Manager is a version control system for your GCP infrastructure layout.

✓ 5.   You want to define alerts on your GCP resources, such as when health
        checks fail. Which is the best GCP product to use?

        ○ Stackdriver Trace

        ○ Deployment Manager

        ✓ Stackdriver Monitoring

        ○ Stackdriver Debugger

        ○ Cloud Functions

✓ 3.   Why might a GCP customer choose to use Cloud Functions?

        ✓ Their application contains event-driven code that they don't want
           to have to provision compute resources for.

        ○ Cloud Functions is the primary way to run Node.js applications
           in GCP.

        ○ Their application has a legacy monolithic structure that they
           want to break apart into microservices with little developer
           effort.

        ○ Cloud Functions is a free service for hosting compute
           operations.

Google Cloud's big data services are fully managed and scalable

Cloud Dataproc	Cloud Dataflow	BigQuery	Cloud Pub/Sub	Cloud Datalab
Managed Hadoop MapReduce, Spark, Pig, and Hive service	Stream and batch processing; unified and simplified	Analytics database; stream data at 100,000 rows per second	Scalable and flexible enterprise messaging	Interactive data exploration

✓ 1. Name two use cases for Google Cloud Dataproc (Select 2 answers).

☐   Manage datasets of unpredictable size

✓   Data mining and analysis in datasets of known size

Correct!

☐   Manage data that arrives in realtime

✓   Migrate on-premises Hadoop jobs to the cloud

✓ 6.   Name two use cases for Google Cloud Dataflow (Select 2 answers).

   ✓   Orchestration

Correct!

   ☐   Manual resource management

   ☐   Reserved compute instances

   ✓   Extract, Transform, and Load (ETL)

✓ 1.   What is TensorFlow?

   ✓   An open-source software library that's useful for building
       machine learning applications

   ○   A managed service for building data pipelines

   ○   A hardware device designed to accelerate machine learning
       workloads

   ○   A managed service for building machine learning models

Correct!

✓ 2. Which statements are true about BigQuery? Choose all that are true (2 statements).

    ✓ BigQuery lets you run fast SQL queries against large databases.

    Correct!

    ☐ BigQuery requires that you provision database instances ahead of use.

    ✓ BigQuery is a good choice for data analytics warehousing.

    Correct!

    ☐ BigQuery is a good choice for online transaction processing.

    ☐ Once in BigQuery, data is not accessible from other GCP services.

✓ 5. Name three use cases for the Google Cloud Machine Learning Platform
      (Select 3 answers).

   ✓ Fraud detection

   Correct!

   ✓ Content personalization

   Correct!

   ✓ Sentiment analysis

   Correct!

   ☐ Query architecture

   ☐ Data preparation

✓ 4. Name three use cases for Cloud Pub/Sub (Select 3 answers).

   ✓ Decoupling systems

Correct!

   ☐ Storage of binary web content

   ☐ Executing ad-hoc SQL queries

   ✓ Analyzing streaming data

Correct!

   ✓ Internet of Things applications

Correct!

Comparing compute options

	Compute Engine	Kubernetes Engine	App Engine Flex	App Engine Standard	Cloud Functions[Beta]
Service model	IaaS	Hybrid	PaaS	PaaS	Serverless
Use cases	General computing workloads	Container-based workloads	Web and mobile applications; container-based workloads	Web and mobile applications	Ephemeral functions responding to events

Comparing load-balancing options

Global HTTP(S)	Global SSL Proxy	Global TCP Proxy	Regional	Regional internal
Layer 7 load balancing based on load	Layer 4 load balancing of non-HTTPS SSL traffic based on load	Layer 4 load balancing of non-SSL TCP traffic	Load balancing of any traffic (TCP, UDP)	Load balancing of traffic inside a VPC
Can route different URLs to different back ends	Supported on specific port numbers	Supported on specific port numbers	Supported on any port number	Use for the internal tiers of multi-tier applications

Comparing interconnect options

VPN	Direct Peering	Carrier Peering	Dedicated Interconnect
Secure multi-Gbps connection over VPN tunnels	Private connection between you and Google for your hybrid cloud workloads	Connection through the largest partner network of service providers	Connect N X 10G transport circuits for private cloud traffic to Google Cloud at Google POPs

Comparing storage options

	Cloud Datastore	Cloud Bigtable	Cloud Storage	Cloud SQL	Cloud Spanner	BigQuery
Type	NoSQL document	NoSQL wide column	Blobstore	Relational SQL for OLTP	Relational SQL for OLTP	Relational SQL for OLAP
Best for	Getting started, App Engine applications	"Flat" data, Heavy read/write, events, analytical data	Structured and unstructured binary or object data	Web frameworks, existing applications	Large-scale database applications (> ~2 TB)	Interactive querying, offline analytics
Use cases	Getting started, App Engine applications	AdTech, Financial and IoT data	Images, large media files, backups	User credentials, customer orders	Whenever high I/O, global consistency is needed	Data warehousing

Choosing among Google Cloud Storage classes

	Multi-regional	Regional	Nearline	Coldline
Intended for data that is...	Most frequently accessed	Accessed frequently within a region	Accessed less than once a month	Accessed less than once a year
Availability SLA	99.95%	99.90%	99.00%	99.00%
Access APIs	Consistent APIs			
Access time	Millisecond access			
Storage price	Price per GB stored per month			
Retrieval price				Total price per GB transferred
Use cases	Content storage and delivery	In-region analytics, transcoding	Long-tail content, backups	Archiving, disaster recovery

in this short module i'll look back on what we covered in this course remember the continuum that this course discussed at the very beginning the continuum between managed infrastructure and dynamic infrastructure gcp's compute services are arranged along this continuum and you can choose where you want to be

00:19on it choose compute engine if you want to deploy your application in virtual machines that run on google's infrastructure choose kubernetes engine if you want instead to deploy your application in containers that run on google's infrastructure in a kubernetes cluster you define in control choose app engine instead if you just

00:39want to focus on your code leaving most infrastructure and provisioning to google app engine flexible environment lets you use any runtime you want and gives you full control of the environment in which your application runs app engine standard environment lets you choose from a set of standard runtimes

00:58and offers finer grain scaling and scale to zero to completely relieve yourself from the chore of managing infrastructure build or extend your application using cloud functions you supply chunks of code for business logic and your code gets spun up on demand in response to events gcp offers a variety of ways to load

01:21balance inbound traffic use global https load balancing to put your web application behind a single anycast ip to the entire internet it load balances traffic among all your backend instances in regions around the world and it's integrated with gcp's content delivery network if your traffic isn't http or https
01:46you can use the global tcp or ssl proxy for traffic on many ports for other ports or for udp traffic use the regional load balancer finally to load balance the internal tiers of a multi-tier application use the internal load balancer gcp also offers a variety of ways for

02:09you to interconnect your on-premises or other cloud networks with your google vpc it's simple to set up a vpn and you can use cloud router to make it dynamic you can also peer with google at its many worldwide points of presence either directly or through a carrier partner

02:28or if you need a service level agreement and can adopt one of the required network topologies use dedicated interconnect consider using cloud datastore if you need to store structured objects or if you require support for transactions and sqlite queries consider using cloud bigtable if you need to store a large amount of single

02:52keyed data especially structured objects consider using cloud storage if you need to store immutable binary objects consider using cloud sql or cloud spanner if you need full sql support for an online transaction processing system cloud sql provides terabytes of capacity while cloud spanner provides petabytes and horizontal scalability
03:18consider bigquery if you need interactive querying in an online analytical

processing system with petabytes of scale i'd like to zoom into one of those services we just discussed cloud storage and remind you of its four storage classes multi-regional and regional are the classes for warm and hot data

03:40use multi-regional especially for content that's being served to a global web audience and use regional for working storage for compute operations nearline and cold

line are the classes for as you'd guess cooler data use nearline for backups and for infrequently accessed content and use cold line for archiving and Disaster Recovery

✓ 1.   Which of these storage needs is best addressed by Cloud Spanner?

    ◯ Structured objects, with lookups based on a single key

    ◯ Structured objects, with transactions and SQL-like queries

    ✓ A relational database with SQL queries and horizontal scalability

    ◯ Immutable binary objects

✓ 2.   Which compute service lets customers run virtual machines that run on Google's infrastructure?

    ◯ App Engine

    ◯ Kubernetes Engine

    ✓ Compute Engine

    ◯ Cloud Functions

✓ 3.   Which of these storage needs is best addressed by Cloud Bigtable?

    ◯ Immutable binary objects

    ◯ Structured objects, with transactions and SQL-like queries

    ✓ Structured objects, with lookups based on a single key

    ◯ A relational database with SQL queries and horizontal scalability

✓ 4.   Which compute service lets customers deploy their applications in containers that run in clusters on Google's infrastructure?

     ◯ App Engine

     ◯ Compute Engine

     ✓ Kubernetes Engine

     ◯ Cloud Functions

✓ 5.   For what kind of traffic would the regional load balancer be the first choice? Choose all that are correct (2 answers).

     ☐ TCP/SSL traffic on popular well-known port numbers

     ☐ TCP traffic (non-SSL) on popular well-known port numbers

     ✓ UDP traffic

> Correct!

     ✓ TCP traffic on arbitrary port numbers

> Correct!

✓ 6.   Choose a simple way to let a VPN into your Google VPC continue to
        work in spite of routing changes,

        ○ Direct Peering

        ○ Carrier Peering

        ✓ Cloud Router

        ○ Dedicated Interconnect

✓ 7.   Which compute service lets customers focus on their applications,
        leaving most infrastructure and provisioning to Google, while still
        offering various choices of runtime?

        ○ Kubernetes Engine

        ○ Compute Engine

        ✓ App Engine

        ○ Cloud Functions

✓ 8.   Which of these storage needs is best addressed by Cloud Storage?

○   Structured objects, with lookups based on a single key

○   A relational database with SQL queries and horizontal scalability

✓   Immutable binary objects

○   Structured objects, with transactions and SQL-like queries

9.   Which of these storage needs is best addressed by Cloud Datastore?

○   Immutable binary objects

✗ ~~Structured objects, with lookups based on a single key~~

○   Structured objects, with transactions and SQL-like queries ✓

○   A relational database with SQL queries and horizontal scalability

9.   Which of these storage needs is best addressed by Cloud Datastore?

  ◯   Immutable binary objects

  ✕   ~~Structured objects, with lookups based on a single key~~

  ◯   Structured objects, with transactions and SQL-like queries

  ◯   A relational database with SQL queries and horizontal scalability

Cloud shell provides the following:

- Temporary Compute Engine VM
- Command-line access to the instance via a browser
- 5 GB of persistent disk storage ($HOME dir)
- Pre-installed Cloud SDK and other tools
- gcloud: for working with Compute Engine and many Google Cloud services
- gsutil: for working with Cloud Storage
- kubectl: for working with Google Kubernetes Engine and Kubernetes
- bq: for working with BigQuery
- Language support for Java, Go, Python, Node.js, PHP, and Ruby
- Web preview functionality
- Built-in authorization for access to resources and instances

Cloud Shell provides you with which of the following? (Select all that apply).

✓ 5 GB of persistent storage (/home)

☐ A command-line tool that requires you to install Cloud SDK

✓ Command-line access to a free temporary Compute Engine VM

✓ Built-in authorization for access to resources and instances

Submit

To create a persistent state in Cloud Shell, which file would you configure?

○ .config

○ .my_variables

○ .bashrc

✓ .profile

Submit

Google Cloud Marketplace lets you quickly deploy functional software packages by providing pre-defined templates with which Google Cloud service?

○ Terraform

○ Template Manager

✓ Deployment Manager

○ Firestore

Submit

Deployment Manager is a Google Cloud service that uses templates written in a combination of YAML, python, and Jinja2 to automate the allocation of Google Cloud resources and perform setup tasks. Behind the scenes a virtual machine has been created. A startup script was used to install and configure software, and network Firewall Rules were created to allow traffic to the service.

✓ 1.   Which of the following __**does not**__ allow you to interact with GCP?

○ REST-based API

✓ Cloud Explorer

○ Cloud Shell

○ GCP Console

That's correct! There are four ways you can interact with GCP: There's the GCP Console, Cloud Shell and the Cloud SDK, the APIs, and the Cloud Mobile App. The Cloud Explorer is not a Google Cloud tool.

✓ 2.   What is the difference between GCP Console and Cloud Shell?

○   Cloud Shell is a locally installed tool, while GCP Console is a temporary virtual machine.

○   There is no difference as these tools are 100% identical.

✓   Cloud Shell is a command-line tool, while GCP Console is a graphical user interface

○   GCP Console is a command-line tool, while Cloud Shell is a graphical user interface

> The GCP Console is a graphical user interface and Cloud Shell is a command-line tool. Both tools allow you to interact with GCP. Even though GCP Console can do things Cloud Shell can't do and vice-versa, don't think of them as alternatives, but think of them as one extremely flexible and powerful interface.

✓ 1.   In GCP, what is the minimum number of IP addresses that a VM instance needs?

✓   One: Only an internal IP address

○   Two: One internal and one external IP address

○   Three: One internal, one external and one alias IP address

> That's correct! In GCP, each virtual machine needs to have an internal IP address. The external IP address is optional; therefore, a VM instance only needs one IP address.

✓ 3.   What are the three types of networks offered in the Google Cloud
        Platform?

        ◯ IPv4 unicast network, IPv4 multicast network, IPv6 network

        ◯ Zonal, regional, and global

        ◯ Gigabit network, 10 gigabit network, and 100 gigabit network

        ✓ Default network, auto network, and custom network.
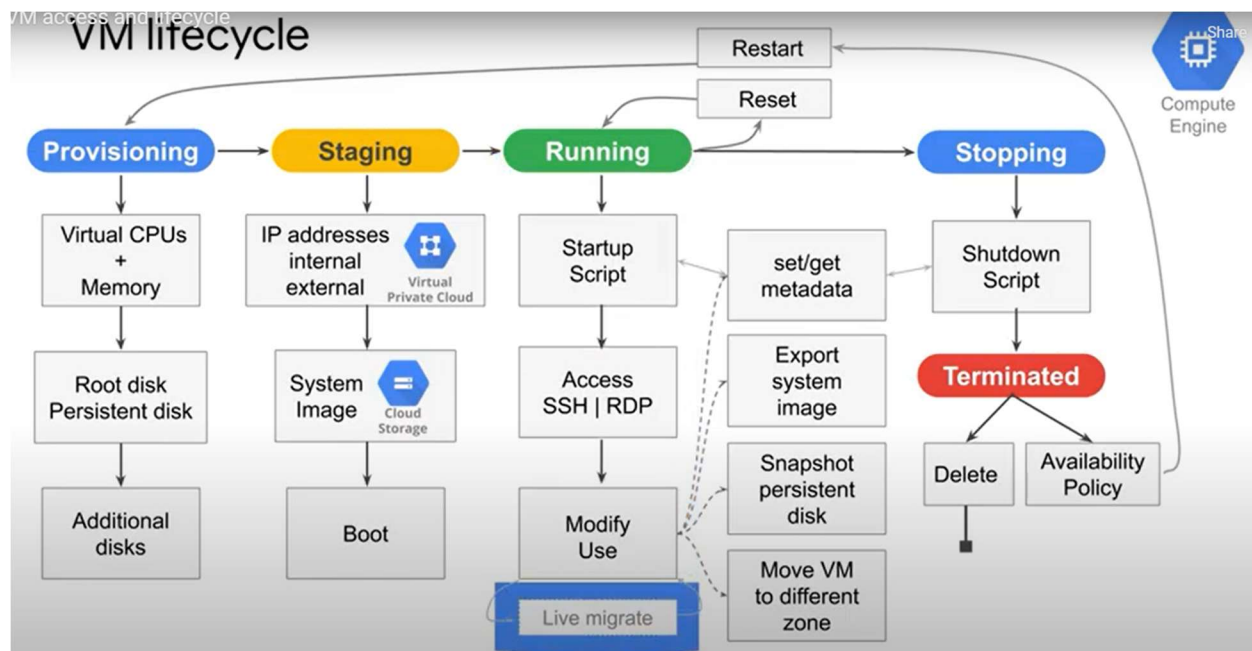
> The default-type network established fixed standard subnetworks with
> predefined IP ranges and it is fast to setup. The auto-type network uses
> the same subnet IP ranges as the default-type, with a network name
> other than default. And custom-type allows you to specify the IP ranges
> of subnets.

✓ 1.   What is one benefit of applying firewall rules by tag rather than by
        address?

        ◯ Tags in network traffic help with network sniffing.

        ◯ Tags help organizations track firewall billing.

        ◯ Tags on firewall rules control which ephemeral IP addresses
           VMs will receive.

        ✓ When a VM is created with a matching tag, the firewall rules
           apply irrespective of the IP address it is assigned.

> When a VM is created the ephemeral external IP address is assigned
> from a pool. There is no way to predict which address will be assigned,
> so there is no way to write a rule that will match that VM's IP address
> before it is assigned. Tags allow a symbolic assignment that does not
> depend on order in the IP addresses. It makes for simpler, more general,
> and easier to maintain, firewall rules.

GCP compute and processing options

	Compute Engine	Kubernetes Engine	App Engine Standard	App Engine Flexible	Cloud Functions
Language support	Any	Any	Python Node.js Go Java PHP	Python Node.js Go Java PHP Ruby .NET Custom Runtimes	Python Node.js Go
Usage model	IaaS	IaaS PaaS	PaaS	PaaS	Microservices Architecture
Scaling	Server Autoscaling	Cluster	Autoscaling managed servers		Serverless
Primary use case	General Workloads	Container Workloads	Scalable web applications Mobile backend applications		Lightweight Event Actions

VM lifecycle

Summary of disk options

	Persistent disk HDD	Persistent disk SSD	Local SSD disk	RAM disk
Data redundancy	Yes	Yes	No	No
Encryption at rest	Yes	Yes	Yes	N/A
Snapshotting	Yes	Yes	No	No
Bootable	Yes	Yes	No	Not
Use case	General, bulk file storage	Very random IOPS	High IOPS and low latency	low latency and risk of data loss

Maximum persistent disks

Machine Type	Disk number limit
Shared-core	16
Standard	128
High-memory	
High-CPU	
Memory-optimized	
Compute-optimized	

✓ 1.   What are sustained use discounts?

○ Discounts you receive by using preemptible VM instances

○ Purchase commitments for specific resources you know you will use

✓ Automatic discounts that you get for running specific Compute Engine resources for a significant portion of the billing month

○ Per-second billing that starts after a 1 minute minimum

That's correct! Sustained use discounts are automatic discounts that you get for running specific Compute Engine resources (vCPUs, memory, GPU devices) for a significant portion of the billing month. To take advantage of the full 30% discount, create your VM instances on the first day of the month, because discounts reset at the beginning of each month.
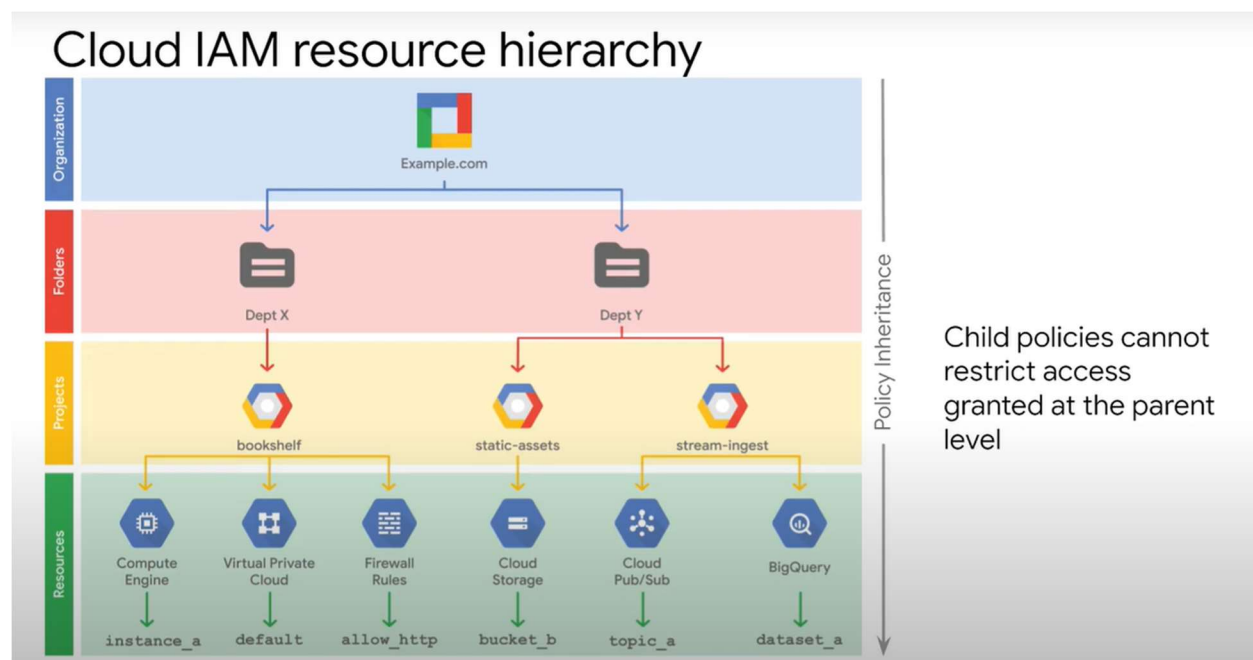
✓ 2.   Which statement is true of persistent disks?

○ Persistent disks are always HDDs (magnetic spinning disks).

○ Persistent disks are physical hardware devices connected directly to VMs.

✓ Persistent disks are encrypted by default.

○ Once created, a persistent disk cannot be resized.

Persistent Disks are not physical disks, they are a virtual-networked service. Each persistent disk remains encrypted either with system-defined keys or with customer-supplied keys.

✓ 1.   Which statement is true of Virtual Machine Instances in Google
        Compute Engine?

        ○   All Compute Engine VMs are single tenancy and do not share
             CPU hardware.

        ○   Compute Engine uses VMware to create Virtual Machine
             Instances.

        ○   A VM in Compute Engine always maps to a single hardware
             computer in a rack.

        ✓   In Compute Engine, a VM is a networked service that simulates
             the features of a computer.

> VMs in Compute Engine are a collection of networked services. This
> includes disks (persistent disks) which are network-attached. In some
> cases the GCP VM behaves unlike hardware or other kinds of virtual
> machines, for example, when a multi-tenant virtual CPU '"bursts'", using
> excess capacity beyond the VM spec.

Cloud IAM resource hierarchy

Child policies cannot
restrict access
granted at the parent
level

✓ 1.   Which of the following is **not** a type of IAM member?

    ✓   Organization Account

    ○   Google Account

    ○   G Suite domain

    ○   Google Group

    ○   Service Account

    ○   Cloud Identity domain

> That's correct! There are five different types of members: Google
> Accounts, Service Accounts, Google groups, G Suite domains, and Cloud
> Identity domains. There are no "Organization Accounts" in Cloud IAM.

✓ 3.   Which of the following is **not** a type of IAM role?

    ○   Primitive

    ○   Custom

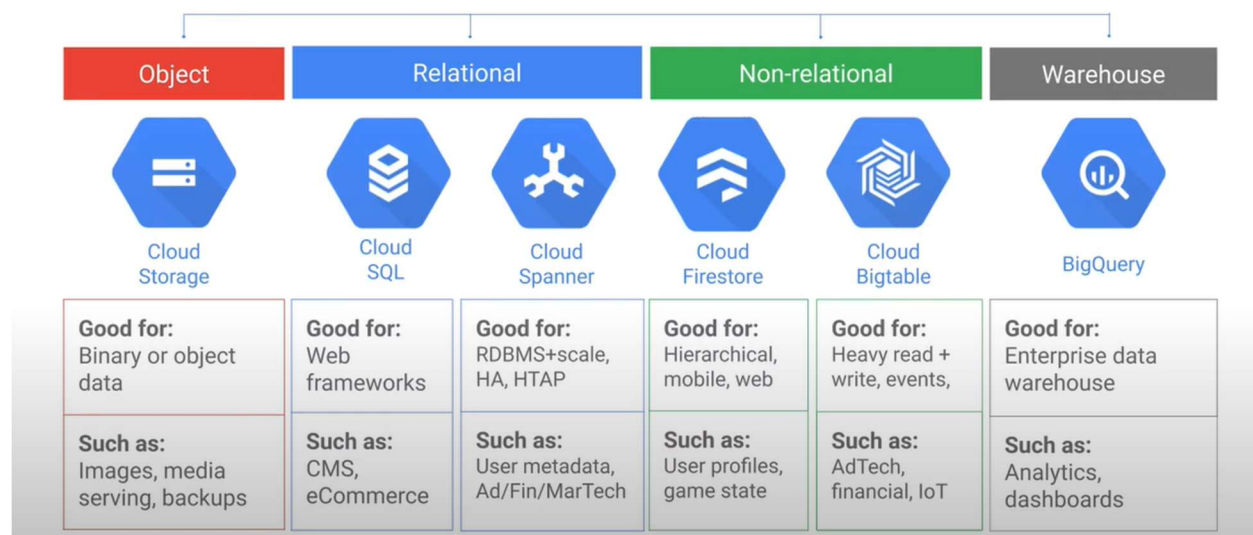   ○   Predefined

    ✓   Advanced

> That's correct! There are three types of roles in Cloud IAM: primitive
> roles, predefined roles, and custom roles. There are no "advanced" roles
> in Cloud IAM.

✓ 2. What abstraction is *primarily* used to administer user access in
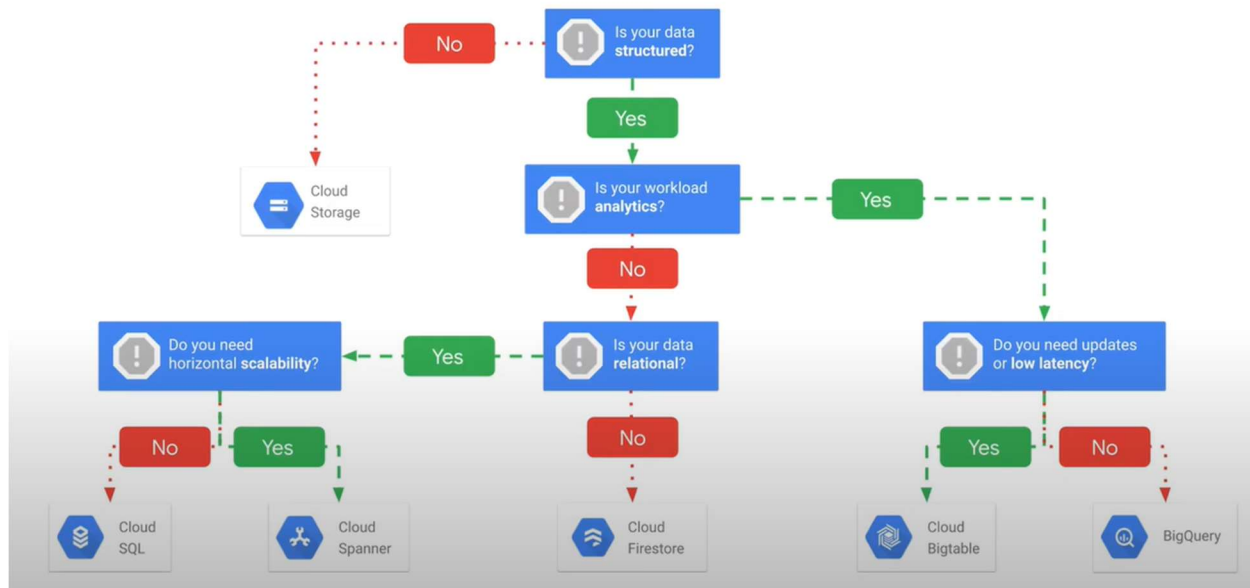   Cloud IAM?

    ⃝ Credentials, an abstraction of an authorization token.

    ⃝ Privileges, an abstraction of access rights.

    ✓ Roles, an abstraction of job roles.

    ⃝ Leases, an abstraction of periodic entitlements.

Cloud IAM administration uses pre-defined roles for administration of
user access. The roles are defined by more granular permissions. But
permissions are not applied to users directly, only through the roles that
are assigned to them.

Storage and database services

Object	Relational		Non-relational		Warehouse
Cloud Storage	Cloud SQL	Cloud Spanner	Cloud Firestore	Cloud Bigtable	BigQuery
Good for: Binary or object data	**Good for:** Web frameworks	**Good for:** RDBMS+scale, HA, HTAP	**Good for:** Hierarchical, mobile, web	**Good for:** Heavy read + write, events,	**Good for:** Enterprise data warehouse
Such as: Images, media serving, backups	**Such as:** CMS, eCommerce	**Such as:** User metadata, Ad/Fin/MarTech	**Such as:** User profiles, game state	**Such as:** AdTech, financial, IoT	**Such as:** Analytics, dashboards

Storage and database decision chart

Overview of storage classes

	Regional	Multi-Regional	Nearline	Coldline
Design patterns	Data that is **used in one region** or needs to remain in region	Data that is **used globally** and has no regional restrictions	Data that is accessed **no more than once a month**	Data that is accessed **no more than once a year**
Use case	Data-intensive computations, data governance	Website content, interactive workloads	Backup, long-tail multimedia content	Archiving or disaster recovery
Availability SLA	99.9%	99.95%	99.0%	99.0%
Durability	99.999999999%	99.999999999%	99.999999999%	99.999999999%
Duration	Hot data	Hot data	30-day minimum	90-day minimum
Retrieval cost	none	none	$	$$

✓ 1.   Which data storage service provides data warehouse services for
        storing data but also offers an interactive SQL interface for querying
        the data?

        ⚪ Cloud SQL

        ⚪ Cloud Dataproc

        ✓ BigQuery

        ⚪ Cloud Datalab

        BigQuery is a data warehousing service that allows the storage of huge
        data sets while making them immediately processable without having to
        extract or run the processing in a separate service.

✓ 2.   Which GCP data storage service offers ACID transactions and can
        scale globally?

        ⚪ Cloud SQL

        ⚪ Cloud CDN

        ⚪ Cloud Storage

        ✓ Cloud Spanner

        Cloud Spanner provides ACID (Atomicity, Consistency, Isolation,
        Durability) properties that enable transactional reads and writes on the
        database. It can also scale globally.

✓ 3.   What data storage service might you select if you just needed to
        migrate a standard relational database running on a single machine in
        a datacenter to the cloud?

   ○ Cloud Storage

   ○ BigQuery

   ✓ Cloud SQL

   ○ Persistent Disk

Cloud SQL offers a PostgreSQL server or a MySQL server as a managed
service.

✓ 2.   How do quotas protect GCP customers?

   ✓ By preventing uncontrolled consumption of resources.

   ○ By preventing resource use in too many zones in a region.

   ○ By preventing resource use of too many different GCP services.

   ○ By preventing resource use by unknown users.

Quotas are established at reasonable defaults for common cloud usage
and proof of concept activities. If you are planning to scale up a
production cloud solution you may need to request that the quotas be
raised. This is a reasonable checkpoint to verify that actions that might
result in a large consumption of resources are reviewed.

✓ 3.   No resources in GCP can be used without being associated with...

      ✓ A project.

      ◯ A user.

      ◯ A bucket.

      ◯ A virtual machine.

> All resources in GCP are tracked and their consumption is logged against a project. A project relates resources to a billing method.

✓ 2.   A budget is set at $500 and an alert is set at 100%. What happens when the full amount is used?

      ✓ A notification email is sent to the Billing Administrator.

      ◯ Everything in the associated project will suspend because there is not more budget to spend.

      ◯ Nothing. There is no point to sending a notification when there is no budget remaining.

      ◯ You have a 4-hour courtesy period before Google shuts down all resources.

> Budgets in GCP are not a way to prevent spending or stop resources. They are a tool for raising awareness about the consumption of resources so that a business can implement its own consumption management processes.

Which service requires a logging agent installed to collect and send logs to Cloud Operations?

- [ ] Kubernetes

- [✓] Compute Engine

- [ ] App Engine Flexible

- [ ] App Engine Standard

Submit

7. On the **Cloud Error Reporting** page, ensure that **Auto Reload** is enabled to and see that no new errors are added.

What would not be considered a benefit of Cloud Operations?

- [ ] Reduces monitoring overhead

- [ ] Faster problem resolution

- [ ] Multi-cloud monitoring

- [✓] Boosts all network performance

Submit

Which service(s) are currently supported by Cloud Error Reporting?

✓   Compute Engine

✓   Kubernetes

✓   App Engine Flexible

✓   App Engine Standard

Submit

✓ 1.   Stackdriver integrates several technologies, including monitoring, logging, error reporting, and debugging that are commonly implemented in other environments as separate solutions using separate products. What are key benefits of integration of these services?

○   Better for GCP only so long as you don't need to monitor other applications or clouds

○   Ability to replace one tool with another from a different vendor

○   Detailed control over the connections between the technologies

✓   Reduces overhead, reduces noise, streamlines use, and fixes problems faster

Stackdriver integration streamlines and unifies these traditionally independent services, making it much easier to establish procedures around them and to use them in continuous ways.

✓ 2.　　What is the purpose of the Stackdriver Trace service?

　　　　○　Reporting on GCP resource consumption as part of managing performance.

　　　　○　Reporting on GCP system errors.

　　　　○　Reporting on application errors.

　　　　✓　Reporting on latency as part of managing performance.

> Stackdriver Trace provides latency sampling and reporting for Google App Engine, Google HTTP(S) load balancers, and applications instrumented with the Stackdriver Trace SDKs. Reporting includes per-URL statistics and latency distributions.

✓ 1.　　What is the foundational process at the base of Google's Site Reliability Engineering (SRE)?

　　　　○　Capacity planning.

　　　　✓　Monitoring.

　　　　○　Testing and release procedures.

　　　　○　Root cause analysis.

> Before you can take any of the other actions, you must first be monitoring the system.

✓ 1.   What does Google Cloud Marketplace offer?

⭕ A platform for trading VM instances

✓ Production-grade solutions from third-party vendors who have already created their own deployment configurations based on Terraform

⭕ A centralized billing platform for all Google Cloud services and applications

Correct! Google Cloud Marketplace offers production-grade solutions from third-party vendors who have already created their own deployment configurations based on Terraform.

✓ 2.   What's the benefit of writing templates for your Terraform configuration?

✓ Allows you to abstract part of your configuration into individual building blocks that you can reuse

⭕ Allows you to hardcode properties for your resources

⭕ Ensure that one resource is created before another; otherwise, resources will be created in parallel

Correct! After you create a template, you can reuse them across deployments as necessary. Similarly, if you find yourself rewriting configurations that share very similar properties, you can abstract the shared parts into templates.

✓ 1.   How are Managed Services useful?

   ○ Managed Services are pay services offered by 3rd party vendors.

   ○ Managed Services are more customizable than infrastructure
      solutions.

   ✓ Managed Services may be an alternative to creating and
      managing infrastructure solutions.

   ○ If you have an existing infrastructure service, Google will
      manage it for you if you purchase a Managed Services contract.
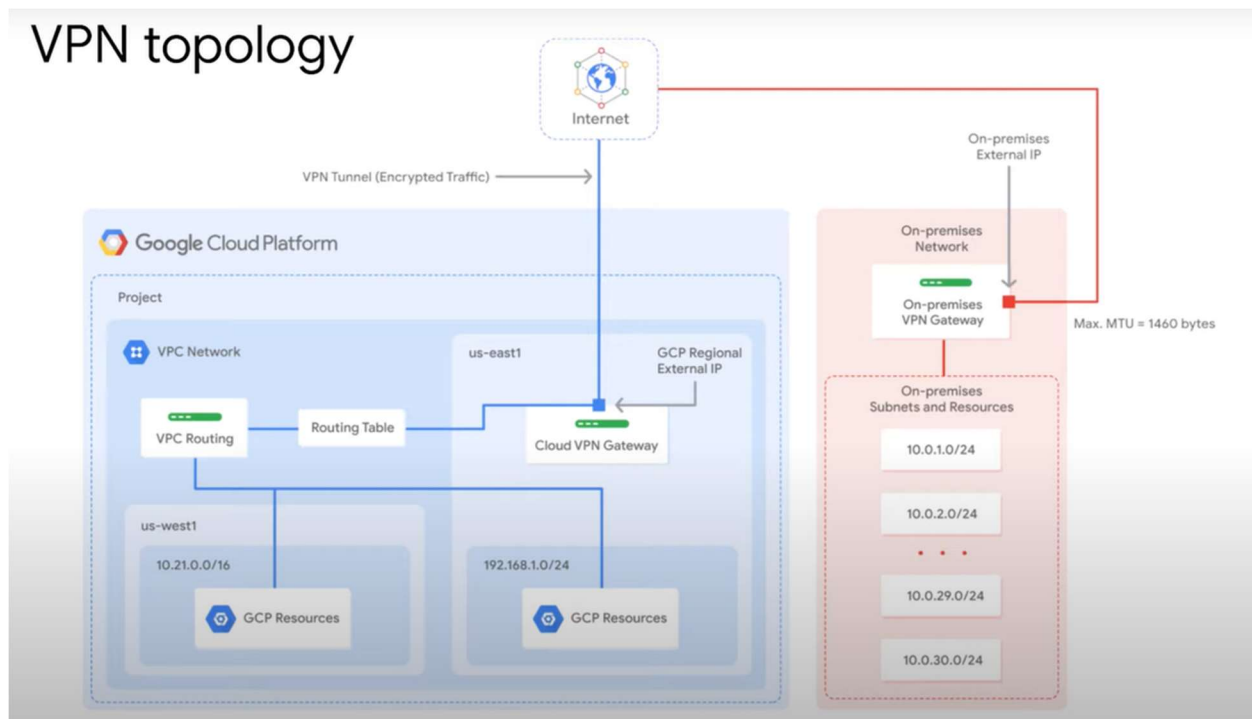
   That's correct! Managed Services are presented as a possible
   alternative to building your own infrastructure data processing solution.

✓ 2.   Which of the following is a feature of Dataproc?

   ○ It doesn't integrate with Cloud Monitoring, but it has its own
      monitoring system.

   ✓ It typically takes less than 90 seconds to start a cluster.

   ○ Dataproc allows full control over HDFS advanced settings.

   ○ Dataproc billing occurs in 10-hour intervals.
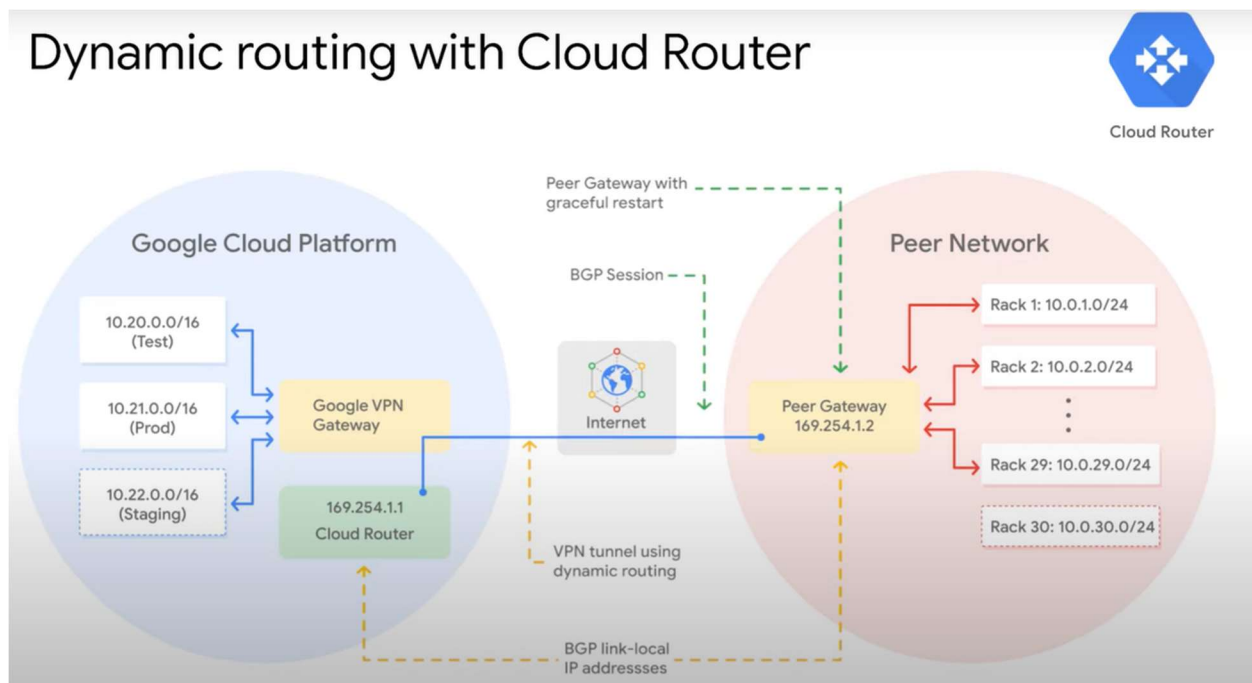
   That's correct! Fast to start a cluster.

VPN topology

MTU is 1462 packets limitations

Dynamic routing with Cloud Router

Comparison of Interconnect options

Connection	Provides	Capacity	Requirements	Access Type
IPsec VPN tunnel	Encrypted tunnel to VPC networks through the public internet	1.5-3 Gbps per tunnel	On-premises VPN gateway	
Dedicated Interconnect	Dedicated, direct connection to VPC networks	10 Gbps per link 100 Gbps BETA	Connection in colocation facility	Internal IP addresses
Partner Interconnect	Dedicated bandwidth, connection to VPC network through a service provider	50 Mbps – 10 Gbps per connection	Service provider	

Shared VPC vs. VPC peering

Consideration	Shared VPC	VPC Network Peering
Across organizations	No	Yes
Within project	No	Yes
Network administration	Centralized	Decentralized

Organization Admin

Shared VPC Admin

Security and Network Admins

Project Owner	Project Owner	Project Owner

Organization Admin (if same org)

Security and Network Admins	Security and Network Admins	Security and Network Admins
Project Owner	Project Owner	Project Owner

✓ 1.   Which Google Cloud Interconnect service requires a connection in a
       Google Cloud colocation facility and provides 10 Gbps per link?

       ○ Carrier Peering

       ○ Cloud VPN

       ○ Direct Peering

       ○ Partner Interconnect

       ✓ Dedicated Interconnect

       Correct! Dedicated Interconnect requires a connection in a Google Cloud
       colocation facility and provides 10 Gbps per link.

✓ 2.   If you cannot meet Google's peering requirements, which network
       connection service should you choose to connect to Google
       Workspace and YouTube?

       ○ Dedicated Interconnect

       ✓ Carrier Peering

       ○ Direct Peering

       ○ Partner Interconnect

       That's correct! Carrier Peering allows you to connect to Google
       Workspace and YouTube without meeting Google's peering
       requirements.

✓ 3.   Which of the following approaches to multi-project networking, uses a
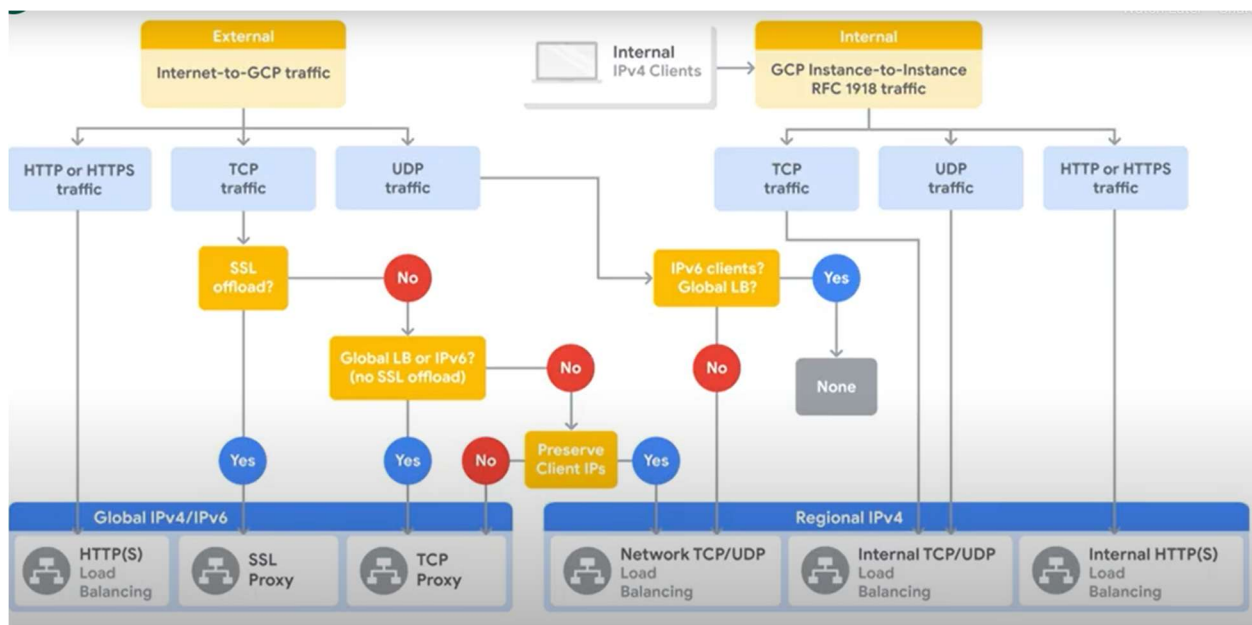   centralized network administration model?
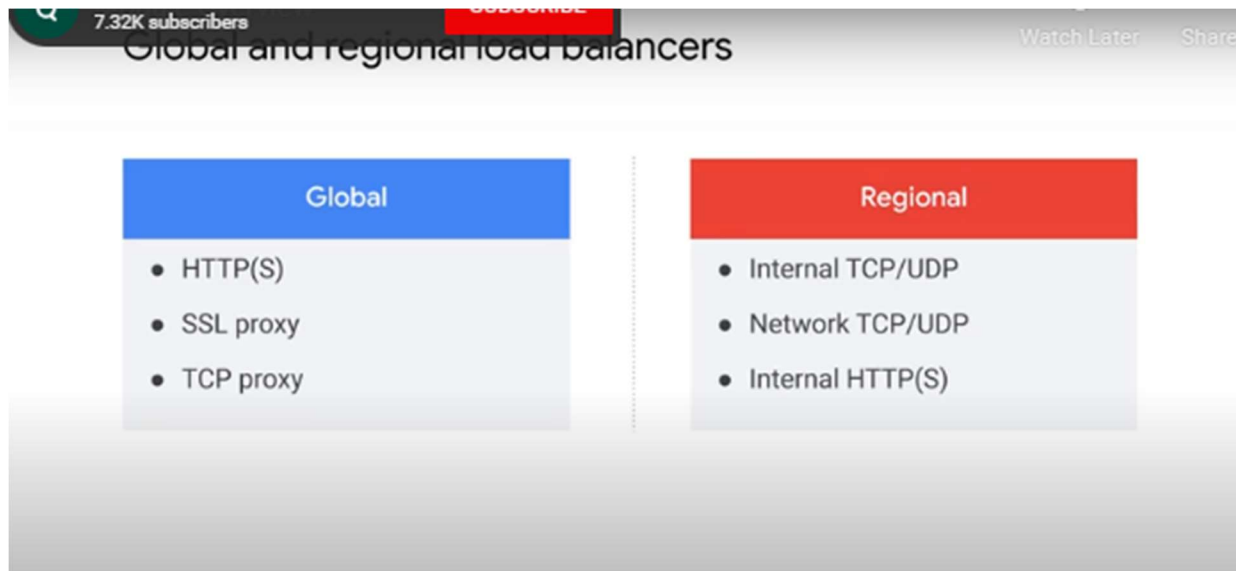
        ◯ VPC Network Peering

        ◯ Cloud VPN

        ✓ Shared VPC

        Correct! Shared VPC is a centralized approach to multi-project
        networking, because security and network policy occurs in a single
        designated VPC network.

✓ 4.   What is the purpose of Virtual Private Networking (VPN)?

        ◯ It is a method to detect intruders at the edge of a network
           boundary.

        ◯ The main purpose is to encrypt data so that it can be stored in
           an encrypted format.

        ✓ To enable a secure communication method (a tunnel) to
           connect two trusted environments through an untrusted
           environment, such as the Internet.

        ◯ VPNs are also called access control lists, or ACLs, and they limit
           network access.

        VPNs use IPSec tunnels to provide an encapsulated and encrypted path
        through a hostile or untrusted environment.

Summary of load balancers

Load balancer	Traffic type	Global/ Regional	External/ Internal	External ports for load balancing
HTTP(S)	HTTP or HTTPS	Global IPv4 IPv6	External	HTTP on 80 or 8080; HTTPS on 443
SSL Proxy	TCP with SSL offload			25, 43, 110, 143, 195, 443, 465, 587, 700, 993, 995, 1883, 5222
TCP Proxy	• TCP without SSL offload • Does not preserve client IP addresses			25, 43, 110, 143, 195, 443, 465, 587, 700, 993, 995, 1883, 5222
Network TCP/UDP	• TCP/UDP without SSL offload • Preserves client IP addresses	Regional IPv4		Any
Internal TCP/UDP	TCP or UDP		Internal	Any
Internal HTTP(S)	HTTP or HTTPS			HTTP on 80 or 8080; HTTPS on 443

✓ 1.   Which of the following is not a Google Cloud load balancing service?

○   Internal load balancing

○   TCP proxy load balancing

○   Network load balancing

○   HTTP(S) load balancing

○   SSL proxy load balancing

✓   Hardware-defined load balancing

Correct! Cloud Load Balancing is a fully distributed, software-defined, managed service for all your traffic. It is not an instance or device based solution, so you won't be locked into physical load balancing infrastructure.

✓ 2. Which three Google Cloud load balancing services support IPv6 clients?

    ✓ TCP proxy load balancing

> Correct! TCP proxy load balancing supports IPv6 clients in addition to IPv4 clients.

    ☐ Internal load balancing

    ✓ HTTP(S) load balancing

> Correct! HTTP(S) load balancing supports IPv6 clients in addition to IPv4 clients.

    ✓ SSL proxy load balancing

> Correct! SSL proxy load balancing supports IPv6 clients in addition to IPv4 clients.

    ☐ Network load balancing

✓ 1. Which of these Google Cloud compute services provides environments for
       execution of code, in which users don't have to worry about infrastructure
       management? Choose all that are correct (2 correct answers).

       ☐ Compute Engine

       ☐ Google Kubernetes Engine

       ✓ App Engine

       Correct!

       ✓ Cloud Functions

       Correct!

✓ 2. Which statements are true about cloud computing? Mark all that are true
       (2 correct answers).

       ✓ Customers pay for the resources they use or reserve.

       That's correct!

       ☐ Cloud computing providers dedicate particular physical resources
          to particular customers.

       ☐ Human intervention is required to stop using cloud resources once
          reserved, and payment continues until the change is confirmed.

       ✓ Customers who need more resources can get them rapidly

       That's correct!

✓ 1. What type of resource is a Compute Engine virtual machine?

  ✓ Zonal

  ◯ Global

  ◯ Multi-regional

  ◯ Regional

✓ 2. What is the base-level organizing entity for creating and using Google
      Cloud resources and services?

  ✓ Project

  ◯ Folder

  ◯ Cluster

  ◯ Region

✓ 3. Within which of these Google Cloud geographic scopes are network latencies generally less than 1 millisecond? Choose all that are correct (2 correct answers).

    ✓   Region

> **That's correct!**

    ✓   Zone

> **That's correct!**

    ☐   Global

    ☐   Multi-Region

✓ 1. At what level in the Google Cloud resource hierarchy is billing set up?

    ○   Organization

    ○   Individual users

    ○   Folder

    ✓   Project

✓ 2. Which type of quota resets at regular intervals?

    ○   Allocation quotas

    ✓   Rate quotas

✓ 1. Which of these ways to interact with give you access to the gcloud and
      kubectl commands? Choose all that are correct (2 correct answers).

      ☐ Console

      ✓ Cloud SDK

      That's correct!

      ✓ Cloud Shell

      That's correct!

      ☐ Cloud Console mobile app

✓ 1. You are considering deploying a solution using containers on Google
      Cloud. What Google Cloud solutions are available to you that will
      provide a managed compute platform with native support for
      containers?

      ✓ Google Kubernetes Engine Clusters

      ○ Compute Engine Autoscaling Groups

      ○ Cloud Functions

      ○ Container Registry

✓ 3.   You need to write some automated scripts to run periodic updates to
       the resources in your Google Cloud environment. What tools can you
       install in your own computers to allow you to run those scripts?

       ✓   The Cloud SDK

       ◯   The Google Cloud Console

       ◯   The Cloud Shell

       ◯   The Cloud Console Mobile app

✓ 4.   You are ready to start work building an application in Google Cloud.
       What Cloud IAM hierarchy should you implement for this project?

       ✓   Create a new folder inside your organization and create projects
           inside that folder for the resources.

       ◯   Create new projects for each of the component applications and
           create folders inside those for the resources.

       ◯   Create a new organization for the project and create all projects
           and resources inside the new organization.

       ◯   Create new projects and resources inside departmental folders
           for the resources needed by the component applications.

✓ 5.   One of the key characteristics of cloud computing is the concept of
       measured service. What is the primary customer benefit of the
       measured service aspect of cloud computing?

       ✓   You pay only for the resources you consume.

       ◯   You can get more resources as quickly as you need them.

       ◯   You share resources from a large pool enabling economies of
           scale.

       ◯   Resources can be allocated automatically.

✓ 1. Which of these problems are containers intended to solve? Mark all that
       are correct (3 correct answers),

    ✓   Applications need a way to isolate their dependencies from one
         another.

    > That's correct.

    ✓   It's difficult to troubleshoot applications when they work on a
         developer's laptop but fail in production.

    > That's correct.

    ☐   Some developers need parts of their applications to be Linux-based
         while other parts are Windows-based.

    ✓   Packaging applications in virtual machines can be wasteful.

✓ 2.   Why do Linux containers use union file systems?

    ○   To control an application's maximum consumption of CPU time
         and memory

    ✓   To efficiently encapsulate applications and their dependencies
         into a set of clean, minimal layers

    ○   To give a container its own virtual memory address space

    ○   To control what an application's ability to see parts of the
         directory tree and IP addresses

✓ 1. What is significant about the topmost layer in a container? Choose all that
       are true (2 correct answers).

       ✓   An application running in a container can only modify the topmost
           layer.

       That's correct!

       ☐   Reading from or writing to the topmost layer requires special
           software libraries.

       ☐   Reading from or writing to the topmost layer requires special
           privileges.

       ✓   The topmost layer's contents are lost when the container is no
           longer running.

✓ 1. What is significant about the topmost layer in a container? Choose all that
       are true (2 correct answers).

       ✓   An application running in a container can only modify the topmost
           layer.

       That's correct!

       ☐   Reading from or writing to the topmost layer requires special
           software libraries.

       ☐   Reading from or writing to the topmost layer requires special
           privileges.

       ✓   The topmost layer's contents are lost when the container is no
           longer running.

✓ 1.   When you use Kubernetes, you describe the desired state you want, and Kubernetes's job is to make the deployed system conform to your desired state and to keep it there in spite of failures. What is the name for this management approach?

⃝ Containerization

⃝ Imperative configuration

⃝ Virtualization

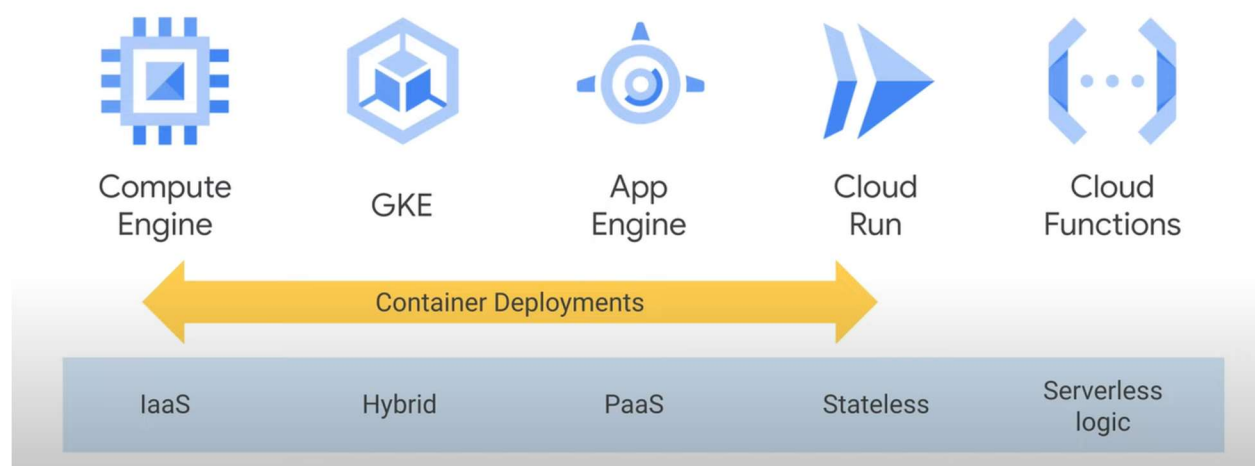✓ Declarative configuration

✓ 2.   What is a stateful application?

⃝ A web front end

⃝ An application that is not containerized

✓ An application that requires data to be stored persistently

✓ 1.   Which of the following supports scaling a Kubernetes cluster as a whole?

⃝ Kubernetes

✓ Google Kubernetes Engine

⃝ Compute Engine

✓ 2.   What is the name for the computers in a Kubernetes cluster that can
       run your workloads?

       ◯ Control Planes

       ✓ Nodes

       ◯ Containers

       ◯ Container images

✓ 3.   What is the relationship between Kubernetes and Google Kubernetes
       Engine?

       ◯ Google Kubernetes Engine is a closed-source variant of
          Kubernetes.

       ✓ Google Kubernetes Engine is Kubernetes as a managed service.

       ◯ Kubernetes and Google Kubernetes Engine are two names for
          the same thing.

Comparing Google Cloud computing solutions

Compute Engine	GKE	App Engine	Cloud Run	Cloud Functions

Container Deployments

IaaS	Hybrid	PaaS	Stateless	Serverless logic

✓ 1. You are classifying a number of your applications into workload types.
       Select the stateful applications in this list of applications. Choose all
       responses that are correct (2 correct responses).

       ✓ A shopping application that saves user shopping cart data between
          sessions.

       That is correct.

       ☐ Image recognition application that identifies product defects from
          images.

       ☐ Web server front end for your inventory system.

       ✓ A gaming application that keeps track of user state persistently.

✓ 2.   You are choosing a technology for deploying applications, and you
       want to deliver them in lightweight, standalone, resource-efficient,
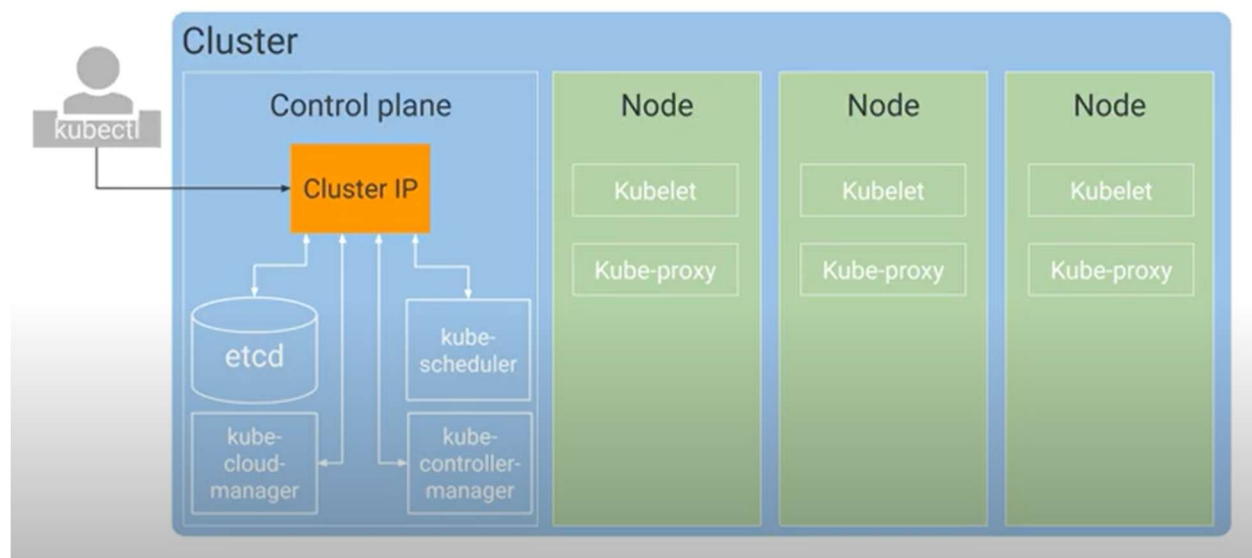   portable packages. Which choice best meets those goals?

       ✓ Containers

       ○ Hypervisors

       ○ Executable files

       ○ Virtual Machines

✓ 4.   You are deploying a containerized application, and you want
        maximum control over how containers are configured and deployed.
        You want to avoid the operational management overhead of
        managing a full container cluster environment yourself. Which Google
        Cloud compute solution should you choose?

        ✓ Google Kubernetes Engine

        ○ Cloud Functions

        ○ App Engine

        ○ Compute Engine

✓ 5.   You are developing a new solution and want to explore serverless
        application solutions. Which Google Cloud compute services provide
        serverless compute resources that you can use with containers?

        ✓ App Engine

        ○ Cloud Functions

        ○ Google Kubernetes Engine

        ○ Compute Engine

✓ 1.   What is the difference between a pod and a container?

        ○ A container contains one or more pods.

        ○ Pods and containers are two names for the name thing.

        ✓ A pod contains one or more containers.

        That's correct! The pods within a container are tightly coupled with one
        another and can communicate using the localhost IP address.

✓ 1.   Which control plane component is the cluster's database?

    ○ kube-apiserver

    ✓ etcd

    ○ kube-controller-manager

    ○ kube-scheduler

✓ 2.   What is the role of the kubelet?

    ○ To maintain network connectivity among the Pods in a cluster

    ✓ To serve as Kubernetes's agent on each node

    ○ To interact with underlying cloud providers

✓ 3.   Which control plane component is the only one with which clients interact directly?

    ○ etcd

    ✓ kube-apiserver

    ○ kube-controller-manager

    ○ kube-scheduler

GKE manages all the control plane components

✓ 1.   What is the purpose of configuring a regional cluster in GKE?

✓   To allow applications running in the cluster to withstand the loss
       of a zone

○   To ensure that the cluster's workloads are isolated from the
    public Internet

✓ 2.   In GKE, how are control planes provisioned?

○   As Compute Engine virtual machines

✓   As abstract parts of the GKE service that are not exposed to
    Google Cloud customers

✓ 3.   In GKE clusters, how are nodes provisioned?

○   As abstract parts of the GKE service that are not exposed to
        Google Cloud customers

✓   As Compute Engine virtual machines

✓ 2.   What are Kubernetes namespaces useful for? Choose all that are correct
        (2 correct answers).

☐   Namespaces make resources more secure,

☐   Namespaces partition Linux kernel resources.

✓   Namespaces allow you to use object names that would otherwise
        be duplicates of one another.

> That's correct!

✓   Namespaces let you implement resource quotas across your
        cluster.

✓ 3.   In a manifest file for a Pod, in which field do you define a container
        image for the Pod?

○   metadata

○   kind

○   apiVersion

✓   spec

✓ 3.   In a manifest file for a Pod, in which field do you define a container
        image for the Pod?

        ◯ metadata

        ◯ kind

        ◯ apiVersion

        ✓ spec

✓ 1.   If you are deploying applications in your Pods that need persistent
        storage, which controller type should you use?

        ◯ DaemonSet

        ◯ Deployment

        ◯ ReplicaSet

        ✓ StatefulSet

✓ 2.   What is the purpose of a Service? Choose all that are true (2 correct answers)

☐   To allow you to put constraints on Pods' resource consumption

✓   To allow you to choose how Pods are exposed

> That's correct!

☐   To provide a way to inspect and diagnose code running in a Pod

✓   To provide a load-balancing network endpoint for Pods

✓ 3.   You want to deploy multiple copies of your application, so that you can load balance traffic across them. How should you deploy this application's Pods to the production Namespace in your cluster?

○   Deploy the Pod manifest multiple times until you have achieved the number of replicas required.

○   Create separate named Pod manifests for each instance of the application and deploy as many as you need.

✓   Create a Deployment manifest that specifies the number of replicas that you want to run.

○   Create a Service manifest for the LoadBalancer that specifies the number of replicas you want to run.

✓ 5.   You need to ensure that the production applications running on your Kubernetes cluster are not impacted by test and staging deployments. Which features should you implement and configure to ensure that the resources for your production applications can be prioritized?

    ○ Configure resource requests for Test, Staging and Production and configure specific Kubernetes resource quotas for the Production Namespace.

    ○ Configure Namespaces for Test, Staging and Production and configure specific Kubernetes resource quotas for the Production Namespace.

    ✓ Configure Namespaces for Test, Staging and Production and configure specific Kubernetes resource quotas for the test and staging Namespaces.

    ○ Configure labels for Test, Staging and Production and configure specific Kubernetes resource quotas for the Production Namespace.

That is correct. Resource quotas are used to limit usage in specific Namespaces, and do not need to be configured for all Namespaces, only those you need to limit.

✓ 6.   You have deployed a new Kubernetes Engine regional cluster with four machines in the default pool for the first zone and left the number of zones at the default. How many Compute Engine machines are deployed and billed against your account?

○   Fifteen. (Four nodes and a single control plane are deployed to each of the three zones. A control plane node is deployed in each zone and it is billed against your account.)

✓   Twelve. (Four nodes are deployed in each of three zones. A control plane node is deployed in each zone but it is not billed against your account.)

○   Ten. (Four nodes are deployed in the first zone and three nodes are deployed in two other zones because you selected the defaults.)

○   Sixteen. (Four nodes are deployed in primary and secondary zones in two regions, for a total of 4 zones and 16 nodes. A control plane node is deployed in each zone but it is not billed to your account.)

That is correct. GKE Regional clusters are deployed across multiple zones in a single region. Google does not bill you for GKE control plane nodes.

✓ 7.   You have a new logging and auditing utility that you need to deploy on all of the nodes within your cluster. Which type of controller should you use to handle this task?

○   StatefulSet

○   Deployment.

✓   DaemonSet

○   ReplicaSet

✓ 2.   Which Kubernetes component does the kubectl command connect to
         in order to carry out operations on a cluster?

         ○ kube-controller-manager

         ○ kube-scheduler

         ○ kube-dns

         ✓ kube-apiserver

✓ 7.   You are designing an application, and you want to ensure that the
         containers are located as close to each other as possible, in order to
         minimize latency. Which design decision helps meet this requirement?

         ○ Give the containers the same labels.

         ○ Place the containers in the same Namespace.

         ○ Place the containers in the same cluster.

         ✓ Place the containers in the same Pod.

We can create a Windows instance in Google Cloud by changing its
____ in the VM instance console.

- ○ Machine Type

- ✓ Boot disk to Windows image

- ○ API Access

- ○ Firewall rules

Submit

Which command is used to check whether the server is ready for an
RDP connection?

- ○ gcloud compute instances list

- ○ gcloud compute ssh

- ✓ gcloud compute instances get-serial-port-output

- ○ gcloud compute instances create

Submit

Three basic ways to interact with Google Cloud services and resources are:

✓   Client libraries

☐   GLib

✓   Cloud Console

☐   GStreamer

✓   Command-line interface

Submit

Every bucket must have a unique name across the entire Cloud
Storage namespace.

✓   True

◯   False

Cloud Storage offers which storage classes:

✓   Nearline

✓   Archive

✓   Standard

✓   Coldline

Submit

The following table pulls definitions from the Google Cloud IAM article, Basic roles, which gives a brief overview of browser, viewer, editor, and owner role permissions:

Role Name	Permissions
roles/viewer	Permissions for read-only actions that do not affect state, such as viewing (but not modifying) existing resources or data.
roles/editor	All viewer permissions, plus permissions for actions that modify state, such as changing existing resources.
roles/owner	All editor permissions and permissions for the following actions: • Manage roles and permissions for a project and all resources within the project. • Set up billing for a project.
roles/browser	Read access to browse the hierarchy for a project, including the folder, organization, and Cloud IAM policy. This role doesn't include permission to view resources in the project.

additional common Cloud Functions use cases:

Use Case	Description
Data Processing / ETL	Listen and respond to Cloud Storage events such as when a file is created, changed, or removed. Process images, perform video transcoding, validate and transform data, and invoke any service on the Internet from your Cloud Function.
Webhooks	Via a simple HTTP trigger, respond to events originating from 3rd party systems like GitHub, Slack, Stripe, or from anywhere that can send HTTP requests.
Lightweight APIs	Compose applications from lightweight, loosely coupled bits of logic that are quick to build and that scale instantly. Your functions can be event-driven or invoked directly over HTTP/S.
Mobile Backend	Use Google's mobile platform for app developers, Firebase, and write your mobile backend in Cloud Functions. Listen and respond to events from Firebase Analytics, Realtime Database, Authentication, and Storage.
IoT	Imagine tens or hundreds of thousands of devices streaming data into Cloud Pub/Sub, thereby launching Cloud Functions to process, transform and store data. Cloud Functions lets you do things in a way that's completely serverless.