GCP

* GCP has 20 Regions 61 zones and 124 network edge locations and over 200 countries
* Cloud shell in GCP is called the cloud SDK
* **Gcloud compute regions list** which gives all the regions list
* REST API gives programmatic access to Google Cloud

Shape

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* APP Engine is first compute service of gcp and its a PAAS
* its a fully managed for web apps and uses autoscaling feature
* APP Engine - standard (app deployed in standard mode run in sandbox)

flexible (it use docker container to deploy and scale up apps)

* billing methods as **sustained use discounts(monthly)** &  **committed use discounts (1 or 3y)**
* **GKE** these are containizired apps managed by kubernetes and has worker node
* Node pool enables mixing and matching the different vm confg
* **GKE**  features are the autoscaling, automatic upgrades, and node auto-repair
* cloud function are the serverless exe environment for the connecting the cloud services
* when an event/ trigger occurs then the serverless exe code execute
* Trigger which is used to connect the event to the function
* **gcloud compute instance list -**which gives the instances lists

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* storage services are classified into 3 types they are **object storage , block storage, file system**
* GCP storage services can able to store the **unstructured data** and **folders and files**
* data can be able to store in location type as single region, dual region, multi region respectively
* in cloud storage (**object**)apps can store and retrieve objects through the single API
* storage access tires **standard** (HOT) **Nearline (cold) 1month Coldline(archive) 1year.**
* **persistent disk (Block)** these are independent of the compute engine
* Each PD can be upto 64TB in size, in this it has one writer and multiple reader and support both SSD & HDD
* Storage types are **zonal, Regional , Local.**
* **Filestore** it has default Unix permissions and NAS-like filesystem and also supports NFS
* These Filestore are available as mount points in the compute engines
* It has bult-in zonal storage type for data availability and data is always encrypted during transit

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* Network service tires they are **premium , Standard**
* **Premium Tire -** it delivers traffic via google premium backbone
* **Standard Tire -** It uses regular connectivity based on ISP network.
* Load balancing the primary task is to distribute the network traffic across the multiple GCE either in single or in multi regions.
* Load Balancing \_ **HTTPS LB (**global LB**), Network LB (**Regional LB , TCP/UDP**)**
* **VPC** is a global resource with a regional subnets. each VPC are logically isolated form each other
* The firewall rules which is used to allow or to restrict the traffic within subnets
* VPC peering which is used to connect two different network VPC
* VPC are securely connected to hybrid envr using **cloud VPN or cloud interconnect.**
* **Hybrid connectivity** they are 3 GCP services they are **cloud interconnect, cloud vpn, peering**
* **cloud interconnect** they extends to the on-prem n/w to GCP via dedicated or partner interconnect
* **Cloud VPN** they used to connect on-prem to GCP via internet through IPSec VPN
* **peering** they provide direct access to the GCP with reduced egress fee (bw fee)

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IAM

* IAM roles **Primitive roles (owner, editor, viewer), predefined roles (**pubsub.publisher, compute.admin, storage.objectAdmin**).**
* **custom roles** fine-grained access and assorted set of permissions
* **IAM** service accounts are being identified by by unique email address these are associated with the key pair
* **Service accounts - user managed, google managed**

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**Cloud SQL**

* its a fully managed RDBMS service and used to manage and maintain and administrate the DB instance
* It supports three types of RDBMS they are **MYsql, postgreSQL, microsoft SQL server**
* it also deliver the scalability,availablity, security and reliability of DB instance

**Cloud spanner**

* it is used to scale horizontal across rows, regions and continents
* it used to support the ACID and ANSI SQL queries and transactions
* Data can be replicated sync with global strong consistency
* It used to run in one of the three regions **read-write, read-only, witness**

**Container Registry**

* single location to manage container images and repositories
* which is used to store images to close GCE, GKE, & Kubernetes cluster
* its a secure, private, scalable and docker registry within the GCP
* it supports the RBAC to access, view and download images.