

Notes from my Google Cloud Associate Cloud Engineer — Section 1



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I passed the **Associate Cloud Engineer** exam. I successfully cleared this exam after 2 months of lecture and practices. In this article I want to share with you the first part of my notes that I took during the preparation steps.

The exam needs a lot of preparation. Before diving in the notes I recommend these useful resources :

- Architecting with Google Cloud Platform Specialization.

Architecting with Google Cloud Platform Coursera THIS TERMS OF SERVICE AGREEMENT (THE "AGREEMENT"), ALONG WITH THE PRIVACY POLICY LOCATED AT... www.coursera.org		
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- Google Cloud Platform Associate Cloud Engineer Practice Test.

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- Google Kubernetes Engine

Getting Started with Google Kubernetes Engine | Coursera

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Billing

- You can create budgets and attach them to project or a billing account, then define alert based on percentage.
- You can export billing information to BigQuery(dataSet) or Cloud Storage (bucket).
- Billing is accumulated from bottom to top (billing accumulates all the resource consumption of a specific project).

Pricing calculator

BigQuery

- On-demand (better) : storage pricing & query pricing
- Flat-rate : storage pricing

Storage options

Cloud bigTable

- Size Petabyte
- Key value API (you can have only one index..)
- No-Sql database
- For flat large data, analytics and big data application use (IoT , machine learning ..)
- Manage scalability
- Heavy read/write query
- Low latency
- Single key lookup

- Structured

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Cloud Datastore

- Size Terabyte
- AppEngine storage option
- kind -> Entity -> properties
- Persistent HashMap
- Structured
- NoSql database for application
- with transactions and SQL-like queries (GQL)
- Multi-regional / Regional
- You can have more than one index / you can set specific column as index in specific row.

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Cloud Storage

	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			
<u>Storage price</u>	Price per GB stored per month			
<u>Retrieval price</u>	Total price per GB transferred			
Use cases	Content storage and delivery	In-region analytics, transcoding	Long-tail content, backups	Archiving, disaster recovery

- Size Petabyte +
- Like file in file system
- Structured & Unstructured
- Immutable object
- The only database that have unstructured objects
- Multi-regional / Regional

- The long-term storage location for data
- They are immutable, and new versions overwrite old unless you turn on versioning.

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Cloud Spanner

- Size Petabyte
- The best of Relationnel and non-relationnel database
- Transactional / horizontale scalability
- Sql
- Enterprise grade security
- Multi-regional / Regional

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Cloud Sql

- Size Terabyte
- Relationnel database
- Transactional
- More faster than cloud spanner
- Sql for application
- Scope is only regional (you can't make replicas within different region , but it is possible in different zone)
- Mysql / posture database

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BigQuery

- Size Petabyte
- Sql
- Analytics target
- Warehouse
- ServerLess

- Scope global

2 — Load Balancing :

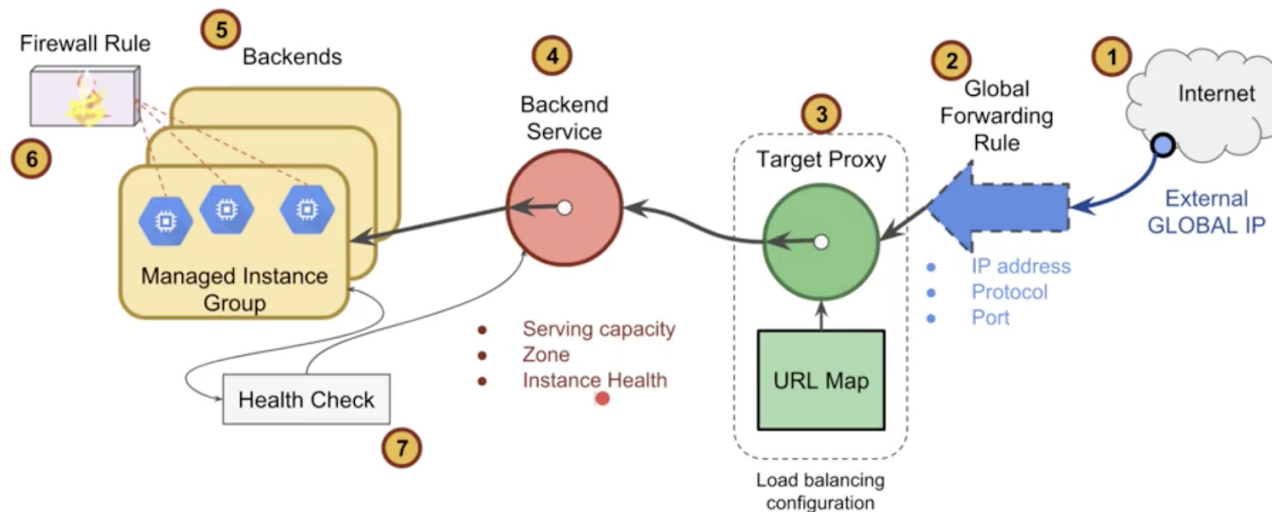
Global	HTTP(S) load balancing	Distributes HTTP(S) traffic among groups of instances based on: <ul style="list-style-type: none"> • Proximity to the user • Requested URL • Both 	External
	SSL Proxy load balancing	Distributes SSL traffic among groups of instances based on proximity to the user.	
	TCP Proxy load balancing	Distributes TCP traffic among groups of instances based on proximity to the user.	
Regional	Network load balancing	<ul style="list-style-type: none"> • Distributes traffic among a pool of instances within a region. • Can balance any kind of TCP/UDP traffic. 	Internal
	Internal load balancing	Distributes traffic from GCP virtual machine instances to a group of instances in the same region.	

- Load balancing is not a hardware. It is some rules that you apply to traffic based on criteria like capacity and distance etc.

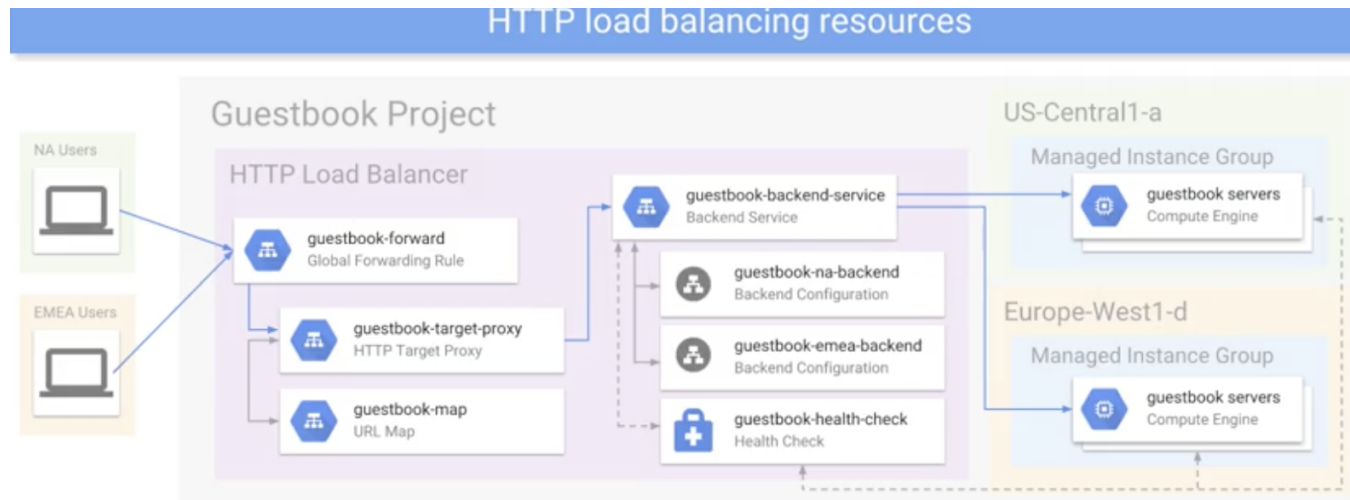
- Load balancer receives traffic and redirect it to different instances (the closet group of instance. If the closet doesn't have enough capacity , it will redirect it to the next closet that have enough capacity)
- Load balancer as a server is much more flexible than a hardware load balancer

HTTP(S) Load Balancing

HTTP(S) Load Balancing



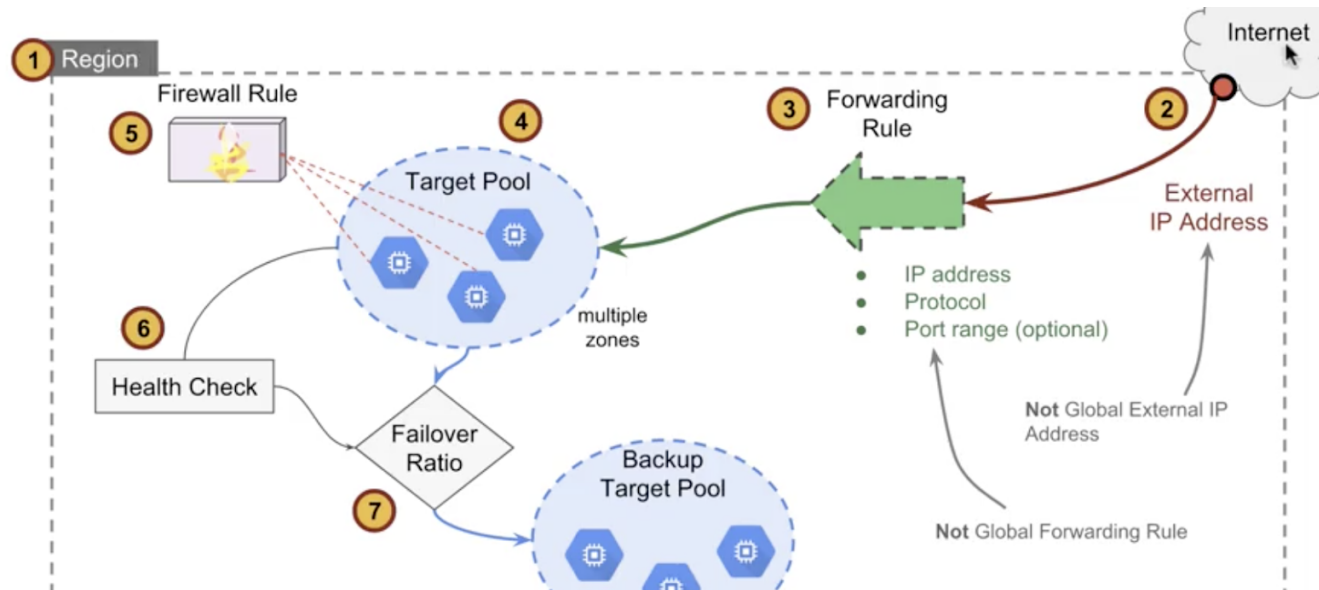
HTTP(s) Load Balancing



- If the selected backend Service don't have the capacity to make a load balancing (CPU utilization, request per seconds..) , the target proxy will choose an other back-end service to do the job.
- Cross-region http(s) load balancing will make the load balancing to the closet region which have enough capacity to support the charge
- Cross-content load balancing will make the load balancing to the region based onURL & header.
- Each back-end service have a collection of instance groups.

Network Load balancing (regional non proxied load balancer)

- the traffic is forwarding to a target pool that choose which health check it will perform on the instances.
- The advantage of the managed instances is the autoscaler, depending on traffic coming to the target pool you can spin up / spin down the instances and this change will be recognized by the target pool
- Each project can have up to 50 target pools.



Best practices of Load Balancing :

- Make a firewall rules to restrict the traffic only for a specific LoadBalancer in the GCP network.

- Disabling external ip addresses.

Autoscaling :

Set an autoscaler per managed instance group to scale-up or scale-down based on traffic load (zonal managed instance group / regional managed instance group) . The autoscaler make an horizontal scalability.

Autoscaling policies :

- Average CPU utilization : maintain cpu utilization among managed instance group to the target utilization (for example it shouldn't exceed or be very less from 70%) .If you exceed 70% you should scale up instances
- You can use Stackdriver's metrics.
- The autoscaler allows multiple policies in a one instance group.
- It collect instance based in policies in order to have the maximum number of instances.
- You can define custom metrics in Stackdriver and use them as base for the autoscaler



I hope you have found the above resources useful for the exam. Please let me know if I should add anything else to this list.

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