Server based vs Serverless
CPU vs GPU
Fixed Environment vs Environment free

Google Cloud

Server based computing

- It is a type of computing that involves management of server.
- servers are located at the our own data centers or in the cloud as a VM.
- We should take care of our own codebase as well as infrastructure.

Serverless computing

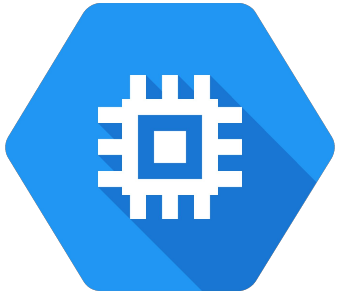
- It is a type of computing where the backend or infrastructure is controlled by cloud provider.
- Serverless doesn’t means that No servers involved.
- pay for use (Zero request == Zero cost)
- cloud managed service takes care of all that is needed to scale your code to serve millions of requests!.

Server vs Serverless Comparison

Server vs serverless	Server based computing	Serverless Computing
Security	Very secure option. Servers are not accessed by unauthorized person. However, building security breaches can lead to data exposure and losses.	Data is stored in cloud vendors which makes it more susceptible to data breaches.
Cost	For server computing cost are very high they need their own maintenance of hardware, electricity bills, cooling tools etc.	Serverless architecture cuts the costs by 70% to 90% as you do not have to pay for extra services you do not require.No hardware equipment cost.
Control	Having physical servers allow us to manage all the operation with full control having great visibility	Going serverless implies handing over the control to a cloud provider, thus losing some supervision over the operations.
Scalability	Difficult to scale, components are expensive and it takes time to set up.	cloud provider’s responsibility is to handle the operations, ensure that everything works smoothly, and fix problems.

Google cloud Platform

Google compute engine is a example of **server based computing** which provides virtual servers on rents called **VM instances.**
It is responsibility of GCP to ensure everything works smoothly.



Google cloud functions is a example of **serverless computing**.
Google Cloud Functions is a serverless computing platform provided by Google Cloud Platform (GCP) that enables developers to build and deploy event-driven functions written in JavaScript, Python, or Go.

CPU(central processing unit)

- CPU is a hardware component that is the core computation unit in a server that contains multiple no. of cores.It is essential for all modern computers.
- CPU handles all the tasks required for all software on the server to run correctly

GPU(graphics processing unit)

- GPU is also a processor that contains more no. of cores as compare to CPU
- By working together, the cores delivers the massive performance while processing a task and task can be divided into many cores in parallel.
- They are used in areas which requires a lot of processing power like data processing, AI, modern gaming etc.

CPU vs GPU

CPU vs GPU	CPU	GPU
Function	**Generalized component that handles main processing functions of a server**	**Specialized component that excels at parallel computing**
Processing	**Designed for serial instruction processing**	**Designed for parallel instruction processing**
Design	**Fewer, more powerful cores**	**More cores than CPUs, but less powerful than CPU cores**
Best suited for	**General purpose computing applications**	**High-performance computing applications**

Google compute engine provides both the components while making VM instances with different processor providers like Nvidia, intel etc.
You can use these GPUs to accelerate specific workloads on your VMs such as machine learning and data processing.

Fixed Environment vs Environment free

Fixed vs free	Fixed	Free
meaning	Running applications on on-premises servers, everything is tightly controlled and configured by the IT team.	Running applications on cloud in a serverless architecture.
Scalability	Bit complex to scale the infrastructure	Easily scalable as compare to fixed environment.
Cost	Cost ineffective	Cost effective
Deploy	Deploy process can be complex because of infrastructure management	Resources can be easily adjusted up or down as needed, and new services can be deployed quickly
Example	**Google compute engine**	**Google Cloud Run**

Thank You