



0x09. Web infrastructure design

Overview :

three server web infrastructure that hosts the website (www.foobar.com)

What is a load balancer ?

- A load balancer is a device or software component that distributes incoming network traffic across multiple servers or resources to ensure optimal utilization, maximize performance, and maintain high availability of applications or services.

What distribution algorithm the load balancer is configured with and how it works ?

- Round Robin algorithm
- The Round Robin algorithm evenly distributes incoming requests or tasks across a set of resources in a sequential manner, ensuring each resource receives an equal share of the workload in rotation.

Is the load-balancer enabling an Active-Active or Active-Passive setup, what is the difference between both?

- Active-Active setup.
- In an Active-Active setup, both load balancers actively distribute incoming traffic across multiple servers simultaneously, allowing for optimal resource utilization and scalability.
- In an Active-Passive setup, one load balancer actively distributes traffic while the other serves as a backup, remaining idle until the active load balancer fails. Upon failure, the passive load balancer takes over to maintain service availability.

How does a database Primary-Replica (Master-Slave) cluster work ?

- In a Primary-Replica (Master-Slave) database cluster, the primary/master node handles read and write operations, while one or more replica/slave nodes replicate data from the primary node.
- Replicas are typically used for read operations to distribute the load and provide redundancy
- Any changes made to the primary node's data are asynchronously propagated to the replica nodes to ensure data consistency and fault tolerance.

Single Points of Failure (SPOF):

- Load Balancer: If it fails, all traffic is affected.
- Database: If the Primary node fails, writes are impacted.

Security Issues :

- No Firewall: Lack of network security.
- No HTTPS: Data transmission is insecure.

Monitoring :

- Missing monitoring tools for performance, uptime, and resource usage.