ALX PROJECT

0x09. Web Infrastructure Design

Explanations :

1- For every additional element, why you are adding it ?

Adding more servers allows the system to handle increased traffic and load. By distributing incoming requests across multiple servers Having multiple servers increases redundancy in the system. If one server fails or experiences issues, the load balancer can redirect traffic to other healthy servers, ensuring uninterrupted service and minimizing downtime.

Distributing workload across multiple servers can improve overall system performance. With more computing resources available, requests can be processed more quickly, leading to faster response times for clients.

2- What distribution algorithm your load balancer is configured with and how it works ?

The distribution algorithm the load balancer is configured with is round-robin_it distributes each request sequentially : first request goes to server 1, second request goes to server 2, third request goes to server 3 and so on.

3- Is your load-balancer enabling an Active-Active or Active-Passive setup, explain the difference between both

The load balancer is enabling an Active-Active setup ; the main difference between active-active and active-passive load balancer setups lies in how they distribute incoming traffic and utilize multiple load balancers. Active-active provides better scalability and performance by distributing the load across all active load balancers, while active-passive offers simplicity and reliability by having standby load balancers ready to take over in case of failure.

4- How a database Primary-Replica (Master-Slave) cluster works ?

A primary-Replica database cluster works by replicating data from a primary database server to one or more replica database servers.

5- What is the difference between the Primary node and the Replica node in regard to the application ?

The replica node is a copy of the primary node , they provide redundant copies of the of the application codebase to protect against hardware failure and increase capacity to serve read requests like searching or retrieving a content.

ISSUES

SPOF : The major single point of failure in this infrastructure is having only one load balancer.

Security issues(no Firewalls, no HTTPS) : Major security issues involve having the application communicate over the http protocol that is not secure and can allow an attacker (who might be in the middle) to view sensitive informations such as passwords. Also without firewalls, servers are more susceptible to various types of cyber attacks

No monitoring : Monitoring the server, website or application in general would allow the owner to identify any problems, downtime or security threats and resolve them quickly before they turn into a serious problem.