ALX Web infrastructure design

1-distributed_web_infrastructure

Additional elements:

- load balancer(HAproxy): It introduces load balancing to distribute incoming traffic across multiple application servers for improved performance and redundancy.
- 2 servers: to handle more requests.

Load balancer Configuration

Distribution Algorithm

➔ It's configured with Round Robin algorithm to evenly distribute requests to each application server in turn.

Active-Active Setup

- This setup enables both server 1 and server 2 to actively handle requests simultaneously. It promotes fault tolerance and proper utilization.
- In active-pasive setup,not all nodes are going to be active. In this case when the first node is active,the second node must be passive or on standby.

Database Configuration

- Database Primary-Replica (Master-Slave) Cluster:

Why: Provides data redundancy, fault tolerance, and load distribution for database queries.

❖ primary Node:

- Receives write (INSERT, UPDATE, DELETE) operations.
- Serves as the authoritative source for data.

❖ Replica Node:

- Replicates data from the Primary node.
- Handles read (SELECT) operations.
- Provides fault tolerance and scalability.

Issues with the Infrastructure:

1. Single Points of Failure (SPOF):

- The database server is considered a single point of failure. To address this, It must be considered to implement a database cluster with more nodes for increased redundancy. The other issue is that it only has one load balancer.

2. Security Issues:

- No firewall: To address this issue implement a firewall to control incoming and outgoing traffic, enhancing server security.
- No HTTPS: To address this issue introduce SSL/TLS certificates for HTTPS to encrypt data in transit and enhance overall security.

3. No Monitoring:

- To address this issue implement monitoring tools to track server performance, detect issues, and ensure proactive management of the infrastructure.

By addressing these issues, the infrastructure can be made more robust, secure, and capable of handling increased traffic.