Web infrastructure design

* For every additional element, why you are adding it

- Adding an extra server to a one server web infrastructure can help to improve its performance, availability, and scalability.

- Adding a load balancer to a web infrastructure can help to distribute incoming traffic across multiple servers, improving performance, availability, and scalability.

* What distribution algorithm your load balancer is configured with and how it works

- **Round Robin** load balancing algorithm works by evenly distributing incoming traffic across a group of servers in a circular fashion. The algorithm assigns each new request to the next available server in the group

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

- The load balancer can enable an Active-Active setup, where both servers are actively running the same service at the same time. In an Active-Passive setup, not all servers are active, with one server being passive or on standby. The main difference between these setups is performance, as Active-Active clusters utilize all servers during normal operation, while Active-Passive clusters only use the backup server during failover.

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

- A Primary-Replica (Master-Slave) database cluster has one primary database that accepts read and write operations and one or more replica databases that replicate data from the primary database. This setup provides fault tolerance and scalability benefits.

* What is the difference between the Primary node and the Replica node in regard to the application

- A replica node is a copy of the primary node that provides redundancy and increased capacity for serving read requests. It helps protect against hardware failures and allows for multiple copies of the application codebase.

**Issues are with this infrastructure**

* Where are SPOF

- If the load balancer fails, it will prevent incoming traffic from being distributed among the servers, resulting in service downtime.

* Security issues (no firewall, no HTTPS)

- No firewall or HTTPS implementation can lead to significant security issues for a web infrastructure. Without a firewall, unauthorized access to the servers and databases becomes possible. And without HTTPS, communication between the servers and client devices is unencrypted, making it easier for attackers.

* No monitoring

- Not having monitoring in a web infrastructure can lead to a lack of visibility into the health and performance of the system. Without monitoring, issues such as slow response times, resource utilization, and errors may go unnoticed.