



### Some specifics about this infrastructure:

1. For every additional element, why you are adding it

- Server: Serves a portion of the users when traffic is distributed
- Load balancer: Distributes traffic using round robin technique thus eliminating single point of failure

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

It uses the Round Robin algorithm thus requests are handled in turns in circular order going through the servers in a sequential order

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

It enables an Active-Active setup; both nodes (servers) are actively running the same kind of service simultaneously.

In an Active-Passive setup, not all nodes are going to be active. In the case of two nodes, if the first node is already active, the second node must be passive or on standby. The key difference between these two architectures is performance. Active-active clusters give you access to the resources of all your servers during normal operation. In an active-passive cluster, the backup server only sees action during failover.

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

It enables data from one database server (the master) to be replicated to one or more other database servers (the slaves). The master logs the updates, which then ripple through the slaves. If the changes are made to the master and slave at the same time, it is synchronous. If changes are queued up and written later, it is asynchronous. It is usually used to spread read access on multiple servers for scalability, although it can also be used for other purposes such as for failover, or analyzing data on the slave in order not to overload the master.

5. 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, they provide redundant copies of the application codebase to protect against hardware failure and increase capacity to serve read requests like searching or retrieving a document.

### **Issues with the infrastructure:**

1. Where are SPOF

Having one load balancer seem to be the single point of failure in this infrastructure

## 2. Security issues (no firewall, no HTTPS)

The 2 security issues are communicating over insecure HTTP protocol (transfers data in plain texts) rather than HTTPS which is secure (encrypts data). This makes it possible for attackers to hijack the process and gain access to sensitive information.

## 3. No monitoring

Since we can't fix or improve what we can't measure, monitoring is essential. It will help detect security threats and reduce downtime.