

- For every additional element, why you are adding it

The new configuration is composed of two master-servers and one slave-servers. As the master-servers are going to be working based on a Active-Active set up, their configuration must be identical, therefore we need to add every additional element as the simple web infrastructure we had in the previous point. The load is going to be managed through a load-balancer, which distributes the queries according to a Robin-Round algorithm. Finally an additional server will be needed to serve a replica or slave server, helping to unload the masters servers reading queries.

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

Our load-balancer is using a Round Robin algorithm distribution. Meaning the queries requested are distributed to every server sequentially one after another. And after sending the request to the last server, the algorithm startarts from the first server. This will bring on average and approximately, to a server load distribution of 50% on each of the two servers configuration.

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

Our load-balancer is enabling an Active-Active set up.

The Active-Active cluster is typically made up of at least two nodes, both activaley running the same type of services at the same time. Their purpose is to achieve load balancing by distributing tasks to different servers in order to prevent overload. As there are more than one servers (nodes) available to severe, the service time and process throughput can have improvements.

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

A database Primary-Replica (Master-Replica) is a mechanism which enables data of one database server (the master) to be replicated or to be copied to one or more computers or database servers (the slaves), in order all users share the same level of information. This process leads to a distributed database in which users can quickly access data without interfering with each other.

The database replication process can either be synchronous or asynchronous. In the first one, the replication process is done from the client server to the model server and then replicated to all the replica servers before the client is notified about the data replication. This method of replication may take longer to verify, however all data was copied before proceeding.

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

One of the main differences between the primary node and the replica node, regarding the application, is that the primary database is regarded as the authoritative source, while the replica database is synchronized to it. The primary node serves as the keeper of information, here the “real” data is kept, then writing only happens here. On the other hand, reading only occurs in the replica or slave node. This architecture purpose is due to safeguard site reliability. In case a site receives a lot of traffic, a replica node prevents overloading of the master node with reading and writing requests. This eases the load of the entire system preventing it to collapse (Theodorus, 2020).