

## **Building www.foobar.com's Three-Server Web Infrastructure**

The user requests access to www.foobar.com.

- The user launches a web browser and types www.foobar.com into it

### **2. DNS and Domain Name:**

- DNS resolves the domain name www.foobar.com to the load balancer's IP addresses (for example, 8.8.8.1 and 8.8.8.2). Round-robin DNS configuration is used to divide requests equally between the two load balancer servers.

### **3. HAproxy Load Balancer:**

- The two application servers split up incoming requests equally by the load balancer (HAproxy). To guarantee that every server receives an equal portion of incoming traffic, it employs a round-robin distribution mechanism. This configuration increases the system's scalability and fault tolerance by enabling high availability and load distribution.

### **4-Application servers. :**

Applications and server-side scripts that run dynamically are handled by two application servers. They create dynamic web pages, run the required code, and handle requests that are sent through the load balancer. Fault tolerance and redundancy are ensured by having numerous application servers. There will be less downtime if one server fails because the other can still handle incoming requests.

### **Nginx, the web server:**

Browser HTTP requests are handled by the web server (Nginx). It sends dynamic requests to the application servers via the load balancer and provides static information immediately. Through effective connection management and static file serving, Nginx enhances system performance and security.

### **6. Your Code Base's Application Files:**

The assets and code of the website are contained in the application files. To guarantee consistency, these files are kept on both application servers and are synced. To ensure consistency in the user experience, all updates or modifications to the program are concurrently deployed to both servers.

### **7. MySQL Primary-Replica Cluster Database:**

As a Primary-Replica (Master-Slave) cluster, the database functions. While the replica node(s) duplicate data from the primary node and handle read operations, the primary node manages write operations. This configuration improves fault tolerance, read scalability, and data redundancy. One of the replica nodes can be elevated to the primary role in order to sustain database operations in the event that the primary node fails.

Concerns Regarding the Infrastructure:

a. SPOFs, or single points of failure:

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Even with certain components being redundant, there could be one or more single points of failure. There could be a disruption in traffic distribution if the load balancer fails.

Furthermore, the website can stop working if the principal database node or both application servers go down at the same time.

**b. Safety Concerns:**

There is no HTTPS configuration and no firewall in the infrastructure. Controlling incoming and outgoing traffic and defending against potential threats and illegal access require the use of a firewall. For data to be secure while it is being transferred between users and web servers, HTTPS encryption is essential. The security and integrity of user data are guaranteed by HTTPS implementation.

**b. Inadequate supervision:**

The infrastructure's availability, security, and performance are not being tracked by any monitoring system. To find problems, evaluate performance indicators, and react quickly to accidents, monitoring tools are crucial. Adopting monitoring solutions makes proactive management and troubleshooting possible, which improves the stability and security of the infrastructure.