A DISTRIBUTED WEB INFRASTRUCTURE

A DESIGN OF A THREE SERVER WEB INFRASTRUCTURE THAT HOST A WEBSITE REACHABLE VIA www.foobar.com. IT MUST BE SECURED, ENCRYPTED TRAFFIC AND MONITORED

- **For Every additional element, why you are adding it**: We have added three component: 3 Firewalls; The first Firewall checks the rules after receiving the requests and could deny following requests. The second firewall is working in the server to prevent someone hacking depending of the requests, and the third firewall acts as a circuit-level firewalls, inspect the transaction of the information. **SSL certificate:** 1 SSL certificate: is added to secure https protocols and encrypt communication. Then, the 'plain text' won't be easy accessed or viewed by a third person, making the protocol communication and data transfer from the browser and web server more secure

What are firewalls for: Firewalls is a network security device that monitors network traffic, it can be understood as a division or "wall" between a private network and public network which limits and blocks network traffic based on a set of security rules in the hardware or software by analyzing data packets that request entry to the network. Additionally, firewalls are used to allow remote access to a private network through secure authentication.

- **Why is the traffic served over HTTPS**: HTTPS stands for HyperText Transfer Protocol Secure, and the traffic is served in order to bring protection by using the secure port 443, which encrypts outgoing information? Then it is more difficult to spy or get access to the site's information.
- **What monitoring is used for:** Monitoring is a practice of surveillance used for quality control. Then, monitoring not only helps to make sure to maintain high quality levels, keeping the established standards and consistency, but also to help in the continuous improvement of the resources performance.
- **How the monitoring tool is collecting data**: it collect from the log of the Application server, MYSQL database and NGINX web server
- Explain what to do if you want to monitor your web server QPS: Queries per second is a measure of the rate of traffic going in a particular server serving a Web domain. It is an important metric to monitor, because it can help you decide whether to scale the server in order to cope with the demand of usage, and resource requirement so the web page won't collapse in the future with overload server request.

Issues with this infrastructure

- Why terminating SSL at the load balancer level is an issue: SSL termination at load balancer is desired because decryption is resource and CPU intensive. Putting the decryption burden on the load balancer enables the server to spend processing power on application tasks, which helps improve performance. It also simplifies the management of SSL certificates.
- **Why having only one MySQL server capable of accepting writes is an issue**: There is **only one** master node at a given time. **one** of the replicas will **have** to take over the master's tasks and start **accepting writes**.
- Why having servers with all the same components (database, web server and application server) might be a problem: with this scenario, if you have a bug in the system, the bug will be valid in all the entire component.