

ALX Project

Web infrastructure design

Task 2

Definitions and Explanations

1. **For every additional element, why am i adding it;** I added three new components; namely a firewall for each server to to protect them from being attacked and exploited, 1 SSL certificate to server www.foobar.com over HTTPS and three monitoring clients that will collect logs and send them to the data collector Sumologic.
2. **What are firewalls for?;** Firewalls are security tools that protect computer networks by controlling the flow of data between trusted internal network and untrusted external networks, like the internet. Their main function is to block unauthorized access, cyber attacks and harmful traffic ,while allowing legitimate communication.
3. **Why is traffic served over HTTPS;** Previously the traffic was passed over HTTP which transfers data in plain text whereas with HTTPS the data is encrypted using Transfer Layer Security(TLS).
4. **What is monitoring is used for?;** It has the ability to detect and diagnose any web application performance issues proactively.
5. **How the monitoring tool is collecting data;** It collects logs of the application server, MySQL Database and Nginx web server. A log is an automatically generated and time-stamped documentation of events that took place in real-time while the system was running.
6. **Explain what to do if you want to monitor your web server QPS;** Since one web server handles 1000 queries per second, essentially I would monitor it from the network and application level.

Issues

1. **Why terminating SSL at the load balancer level is an issue?** It will result in the loss of end-to-end encryption. When SSL is terminated at the load balancer, the traffic between the load balancer and backend servers is often unencrypted. This exposes sensitive data to potential risks if the internal network is compromised.
2. **Why having only one MySQL server capable of accepting writes is an issue;**Once it is down it means data can be added or updated meaning some features of the application won't work properly
3. **Why having servers with all the same components (database, web server and application server) might be a problem;** Servers running the same

components might struggle with resource contention which is the ability for a server to manage users accessing the same resources(CPU, bandwidth, memory and disk I/O).