ALX Project

Web infrastructure design

Task 2.

Definitions and Explanations

1. **For every additional element, why are adding it;** we have added three new components; a firewall for each server 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 our data collector Sumologic.

2. **What are firewalls for;** is a network security system that monitors and controls incoming and outgoing network traffic based on predetermined security rules. It basically establishes a barrier between a trusted network and an untrusted network.

3. **Why is the traffic served over HTTPS**; because previously the traffic was passed over Hypertext Transfer Protocol (HTTP) which transfers data in plain text while HTTPS is secure where the data is encrypted using Transfer Layer Security (TLS).

4. **What monitoring is used for;** it provides the capability 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 in a computing context is the automatically produced and time-stamped documentation of events relevant to a particular system.

6. **Explain what to do if you want to monitor your web server QPS;** one web server handles 1K queries per second (QPS), I would basically monitor it from the network and application level.

Issues with This Infrastructure

1. **Terminating SSL at the Load Balancer Level:** Terminating SSL at the load balancer level can expose decrypted data within the infrastructure, potentially creating

a security risk. It's important to implement proper security measures within the infrastructure to safeguard sensitive data.

2. **Single MySQL Server for Writes:** Having only one MySQL server capable of accepting writes can create a single point of failure. If the Primary server fails, it can disrupt write operations and impact data availability.
3. **Servers with Identical Components:** Using servers with all the same components (database, web server, and application server) can lead to resource contention and bottlenecks. It's important to optimize server configurations and distribute workload effectively to ensure smooth operation.

This three-server web infrastructure addresses security and monitoring requirements while providing redundancy, encryption, and performance. However, addressing the identified issues and implementing best practices will further enhance the reliability, security, and scalability of the infrastructure.