ALX PROJECT: Web Infrastructure Design

Task 0. Simple web stack

Questions and answers.

1. What is a server:

A server is a computer that manages network resources and provides services to other computers, known as clients, in the same network. Servers are designed to handle specific tasks and functions, such as storing and managing data, running applications, or facilitating communication between different devices.

2. What is the role of a domain name:

A domain name plays a crucial role in facilitating human-friendly access to websites and online resources on the Internet. It serves as a user-friendly alias for the numeric IP addresses associated with each computer or server on the Internet.

3. What type of DNS record `www` is in `www.foobar.com:`

It is a 'cname'.

4. What is the role of the Web Server:

A web server's primary function is to generate static content handle and respond to incoming requests from clients (typically web browsers) by serving web pages to users (basically HTML and CSS) over the protocol HTTP.

5. What is the role of the application server:

The role of the application server is to generate dynamic contents by executing server-side code such as JSP, Ajax, PHP, etc. It plays a crucial role in the architecture of web applications by handling the business logic, application processes, and communication between the user interface (typically a web browser) and the backend databases or services.

6. What is the role of the database:

A database plays a crucial role in storing, organizing, and managing data in a structured and efficient manner. It acts as a central repository for data that can be easily accessed, manipulated, and retrieved by applications.

7. What is the server using to communicate with the computer of the user requesting the website:

The server communicates through HTTP protocol.

Issues

A. SPOF, which stands for Single Point of Failure, arises when a system is vulnerable due to dependency on a singular element. This vulnerability is evident when relying on a lone server that integrates the roles of a singular web server, application server, and database. In such cases, if this solitary component fails, it has the potential to disrupt the entire system's functionality

B. During maintenance requirements, such as deploying new code that necessitates restarting the web server, there is a possibility of an extended downtime period beyond initial estimates. This prolonged downtime can occur when the server relies on a single code base that is temporarily inaccessible. Consequently, users will face an inability to access the website and its content, leading to a suboptimal user experience and potential loss of traffic.

C. Scalability becomes a challenge in the event of a high influx of traffic. The direct pointing of the domain name to the server without the inclusion of a load balancer makes it difficult to efficiently manage heightened loads. This presents an obstacle when a substantial number of users attempt to access the website's content, potentially resulting in a subpar user experience and imposing limitations on the number of users the website can effectively accommodate.