Explanation of Roles:

What is a server?
The server is a computer that hosts the entire web infrastructure. It manages requests and responses, ensures data communication, and serves as the central unit of the architecture.

What is the role of the domain name?
The domain name is a human-readable name that represents the website's IP address. It allows users to access the website without needing to remember the IP address. In our case the domain name is **foobar.com.**
- DNS Record: The DNS record is like a phone book that translates the domain name (foobar.com) to its corresponding IP address (8.8.8.8), allowing users to find the server.

What type of DNS record www is in www.foobar.com?
The "www" in www.foobar.com is a subdomain that is commonly used for the web version of a site.

What is the role of the web server?

A web server's fundamental job is to accept and fulfill requests from clients for static content from a website (HTML pages, files, images, video, and so on). The client is almost always a browser or mobile application and the request takes the form of a Hypertext Transfer Protocol (HTTP) message, as does the web server's response. The web server serves us to be able to store and transmit the data that is requested by the client (browser) to the Application Server.
Eg: Nginx, Apache

What is the role of the application server?

The application server hosts the website's codebase and handles more complex tasks like processing user input, interacting with the database, and generating dynamic content.
The application server is the one that provides the dynamic part to the application, since it will be in charge of managing most (or all) of the business logic and access to the application data.
Eg: Unicorn, Gunicorn,

What is the role of the database?

The database (MySQL) stores and manages the website's data, ensuring efficient storage, retrieval, and manipulation of information.
The Database Server will be in charge of keeping the data organized and related for easy and fast access to it. In addition, thanks to this we can achieve the persistence of the data in the application. In this case, we use MySQL(Any other Database can be use) because it is free software and its main feature is speed, since it was designed from the beginning with speed in mind.

What is the server using to communicate with the computer of the user requesting the website?

Web servers and client devices communicate using the HTTP (Hypertext Transfer Protocol). Think of HTTP as the language they use to converse and exchange information.

Note:

The client makes the request through the web browser, the connection is established with the server that contains the request file through TCP (which is in layer 4: transport layer of the OSI Model) that works with IP (internet protocol) the two TCP/IP constitute a communication protocol that is the most used on the web.

Once the connection is established, a request/response can be exchanged between the client and the server through through the HTTP protocol using the port 80 or the HTTPS protocol (encrypted connection that protects the integrity and confidentiality of the data exchanged) through port 443 if SSL certificate is enable.

Issues with the Infrastructure:

1. Single Point of Failure (SPOF): The entire website relies on a single server. if component of the system fails, there is no backup that can support the continuity of the functionality of the system, bringing the whole system to a collapse by being unable to operate.

2. Downtime during Maintenance: When maintenance is needed, such as deploying new code or updating the web server, the website might need to be taken offline temporarily. This can lead to user frustration and lost business opportunities.

3. Scaling Challenges: If the website experiences a surge in traffic, a single server might not handle the load efficiently. Scaling to accommodate more users becomes difficult with this architecture. Overload of traffic can be a risk to the server capacity. This, because there is no possibility to scale the service with additional servers as backup. Leading to a possible breakdown of the web page and client requests, as traffic surpasses servers capacity.