ALX PROJECT

`0x09-web_infrastructure_design`

`1-distributed_web_infrastructure`

A user types “www.foobar.com” into their browser.

1. **DNS Resolution**:
    - The DNS server resolves “www.foobar.com” to the load balancer’s IP address (e.g., 8.8.8.8).
2. **Load Balancer (HAproxy)**:
    - **Purpose**: Distributes incoming requests across the two servers.
    - **Distribution Algorithm**: Round-robin (alternates between servers).
    - **Active-Active Setup**: Both servers handle traffic simultaneously.
3. **Server 1 and Server 2**:
    - **Web Server (Nginx)**:
        - **Role**: Handles HTTP requests.
        - **Serves Static Content**: HTML, CSS, images.
        - **SSL/TLS Termination**: Handles HTTPS encryption.
    - **Application Server**:
        - **Role**: Executes dynamic code (e.g., PHP, Python).
        - **Generates Dynamic Content**: Personalized pages, data processing.
4. **Application Files (Code Base)**:
    - Your website’s code resides on both servers.
    - Application server executes this code.
5. **MySQL Database**:
    - **Role**: Stores structured data (e.g., user profiles, blog posts).
    - **Primary-Replica Cluster**:
        - **Primary Node (Master)**:
            - Accepts write operations (inserts, updates).
            - Authoritative source.
        - **Replica Node (Slave)**:
            - Replicates data from the primary.
            - Handles read operations (queries).

Issues with this Infrastructure:

1. **Single Point of Failure (SPOF)**:
    - If either server fails, the site may go down.
2. **Security Concerns**:
    - No firewall: Vulnerable to attacks.
    - No HTTPS: Data transmission is unencrypted.
3. **Lack of Monitoring**:
    - No visibility into performance or errors.