Online Forum

Develop an internet forum where registered users can exchange opinions on various topics. Topics are divided into categories, and the forum supports at least the following areas/rooms: Science, Culture, Sports, and Music. The web application consists of three parts, accessible to users depending on their user group: Administrator, Moderator, and Forum User.

The Administrator section of the application can only be accessed by the Administrator group, and it manages user accounts:

- Approves/disapproves access for registered users.
- Assigns user groups.
- Defines permissions for users (e.g., adding, editing, deleting comments for specific categories).

The Moderator section of the application can be accessed by users belonging to the Administrator and Moderator groups, and it manages forum comments:

- Approves new comments for publication (with or without modification).
- Disapproves comments.

The Forum User section of the application can be accessed by all user groups and is organized by rooms/categories, displaying the latest 20 comments for each area. Each comment displays minimal information such as content, user name, and time of publication.

New users can register for the forum, and after approval by the Administrator, they receive an email notification. Users can log in using two-factor authentication, where they receive a verification code via email after entering their username and password.

The system architecture includes the following components:
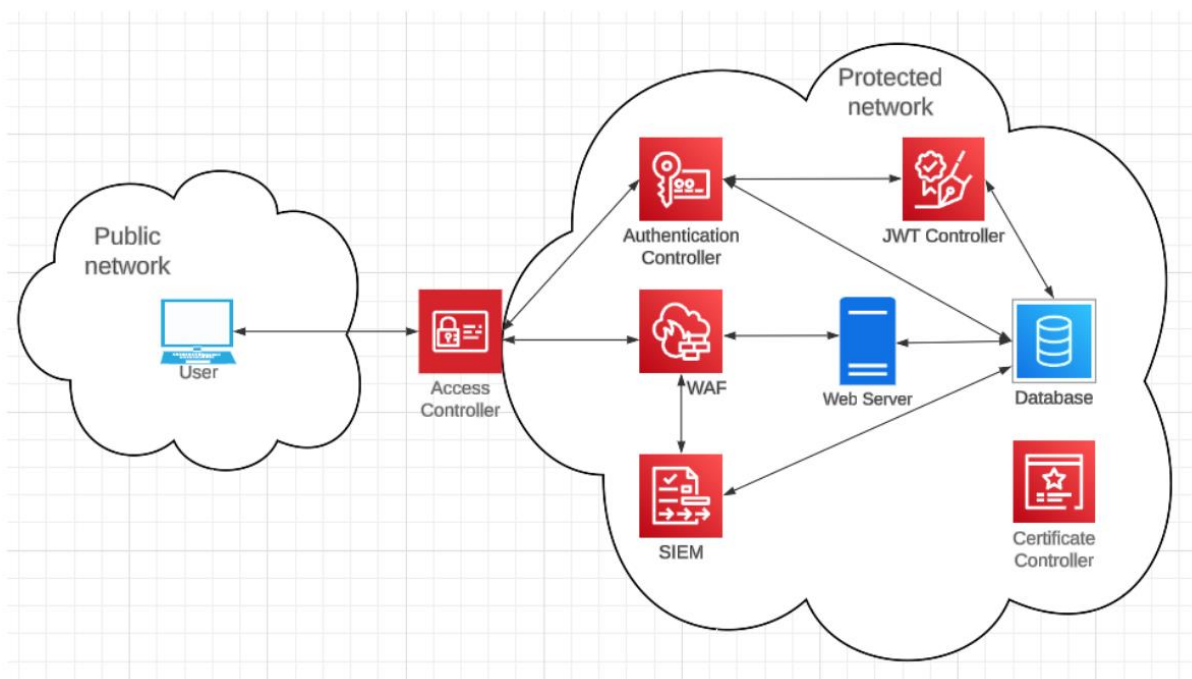
- Access Controller: Accepts user requests, communicates with other components, and returns responses to users.
- Authentication Controller: Handles user authentication and authorization of user requests. Upon successful login, the user receives a JWT token for session tracking.
- JWT Controller: Responsible for issuing and validating tokens.
- WAF (Web Application Firewall): Scans traffic to the web server, allowing only benign requests while rejecting potentially malicious ones.
- Certificate Controller: Issues, monitors, and revokes digital certificates for all components.
- SIEM (Security Information and Event Management): Monitors and logs all security-sensitive requests.

In addition to standard login methods, the system supports OAuth2 framework for authentication, allowing users to log in using external accounts (e.g., Google, GitHub).