Professional System Architecture Document

1. High-Level Overview

This document describes the architecture of the backend system including routing, middleware, controllers, database models, and real-time event flow.

2. Request Lifecycle

Client Request -> Route Layer -> Middleware (JWT auth, admin checks) -> Controller -> Mongoose Model -> MongoDB -> Response

3. Routes

- /api/auth: Login & Registration (User & Admin)

- /api/user: User dashboard

- /api/admin: Admin dashboard & user management

- /api/content: Blogs, alerts, admin stats with Socket.IO integration

4. Middleware

- authMiddleware: Verifies JWT, attaches decoded user to req.user

- adminMiddleware/adminOnly: Ensures role === admin

5. Controllers

- Authentication controllers handle registration/login and issue JWTs.

- Blog controller provides CRUD for admin blogs.

- Alert controller saves alerts and pushes real-time notifications via Socket.IO.

- Dashboard controller provides admin statistics.

6. Data Models

- User: name, email, password (hashed)

- Admin: username, email, password (hashed)

- Blog: title, content, author ref

- Alert: message, type, createdBy ref

7. Real-time Architecture (Socket.IO)

Admin triggers an alert -> alert saved -> io.emit("new-alert") -> all clients receive update.

8. Database

MongoDB with Mongoose schemas for Users, Admins, Blogs, Alerts.

This document represents the complete functional architecture flow.