

Scalability & Availability Considerations

Handling Increased Users or Data:

The system leverages Firebase Authentication and Realtime Database, both of which are designed to scale automatically as user demand increases. Firebase efficiently manages authentication requests, while the NoSQL structure of Realtime Database allows for fast, scalable data retrieval without complex queries. Additionally, only registered users can add data, ensuring that database writes are controlled and authenticated.

Load Balancing and Caching:

Firebase services inherently distribute traffic across multiple servers, reducing bottlenecks and improving response times. API requests made to Firebase Authentication and Realtime Database are handled by Google's infrastructure, which dynamically manages scaling without requiring manual load balancing.

Deployment Strategy and Uptime Considerations:

The system is going to be deployed on AWS EC2 instances, ensuring high availability and scalability. Auto Scaling Groups (ASG) adjust the number of running instances based on traffic, preventing performance degradation during peak loads. AWS Route 53 ensures reliable DNS resolution, and CloudWatch Monitoring helps detect failures and trigger automated recovery actions, minimizing downtime.