

## Project Design Phase

### Solution Architecture

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| Team ID       | LTVIP2026TMIDS47032                               |
| Project Title | Flight finder: navigating your air travel options |

#### Solution Architecture Overview

Solution architecture defines how different components in the flight booking platform interact to deliver a seamless experience for users and admins. It maps business goals (ease of flight search, booking, notifications, payment, etc.) with technology components.

#### Goals of the Architecture

- Identify best-fit technologies for flight search, booking, and notifications
- Define behavior, integration, and deployment of each module
- Ensure scalability, reliability, and availability for end users and admins □ Enable fast delivery and easy maintenance via modular components

#### Components Overview

| Component            | Technology                      | Purpose  |
|----------------------|---------------------------------|--|
| Frontend (Web & App) | ReactJS (Web), Flutter (Mobile) | User interface for searching, booking, login     |
| Backend API Layer    | Node.js or Flask                | Business logic for user flows, booking, payments |
| Database             | PostgreSQL / Firebase Firestore | Store user, flight, booking, and payment data    |
| Payment Gateway      | Razorpay / Stripe               | Handle secure online transactions                |
| Notification System  | Twilio / SendGrid               | SMS/email confirmation for bookings & updates    |

|                      |                      |   |
|----------------------|----------------------|---|
| File Storage         | AWS S3               | Store PDF tickets and booking confirmations         |
| Admin Dashboard      | ReactJS + Chart.js   | Flight management, analytics, reports               |
| Cloud Infrastructure | AWS EC2 / Kubernetes | Scalable, secure, and monitored deployment platform |

Architecture Features

- Microservices-based: Each service (user, flight, booking, payment) can be scaled independently.
- REST APIs: Ensure loose coupling between frontend and backend.
- Secure Transactions: HTTPS, JWT Auth, payment gateway integration.
- Real-time Notifications: Integrated with external APIs (Twilio/SendGrid).
- Cloud-hosted: Ensures high availability and global access.

Solution Architecture Diagram

