

1. High-Level System Architecture



- Implementation Notes:**
- Database Choice:** PostgreSQL for ACID compliance and JSONB support for flexible event storage.
 - Caching Strategy:** Redis with 5-minute TTL for leaderboard, instant invalidation on updates.
 - Message Queue:** RabbitMQ or Kafka for reliable event delivery.
 - Real-time Protocol:** WebSockets with SSE fallback for broader compatibility.
 - Security:** JWT with 15-minute expiry, refresh token rotation, and comprehensive audit logging.

