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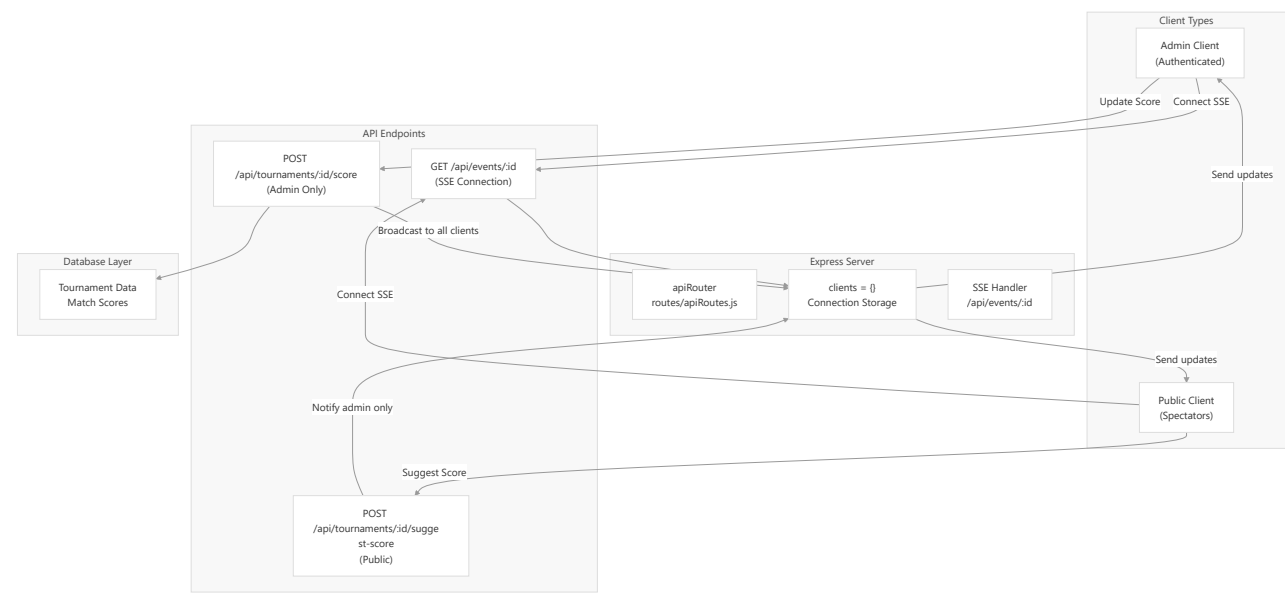
This document covers the real-time communication system in PadelFlow that enables live score updates, spectator interactions, and tournament monitoring. The real-time features are built using Server-Sent Events (SSE) to provide live updates to both administrators and public spectators during tournaments.

For information about tournament management workflows, see [Tournament Management Features](#). For user authentication and role management, see [User Roles and Authentication](#).

System Overview

PadelFlow implements a real-time communication layer that allows multiple types of clients to receive live updates about tournament progress and scores. The system distinguishes between authenticated administrators who can update scores and public spectators who can view live updates and submit score suggestions.

Real-time Architecture



Sources: README.md | 135-144 app.js | 14

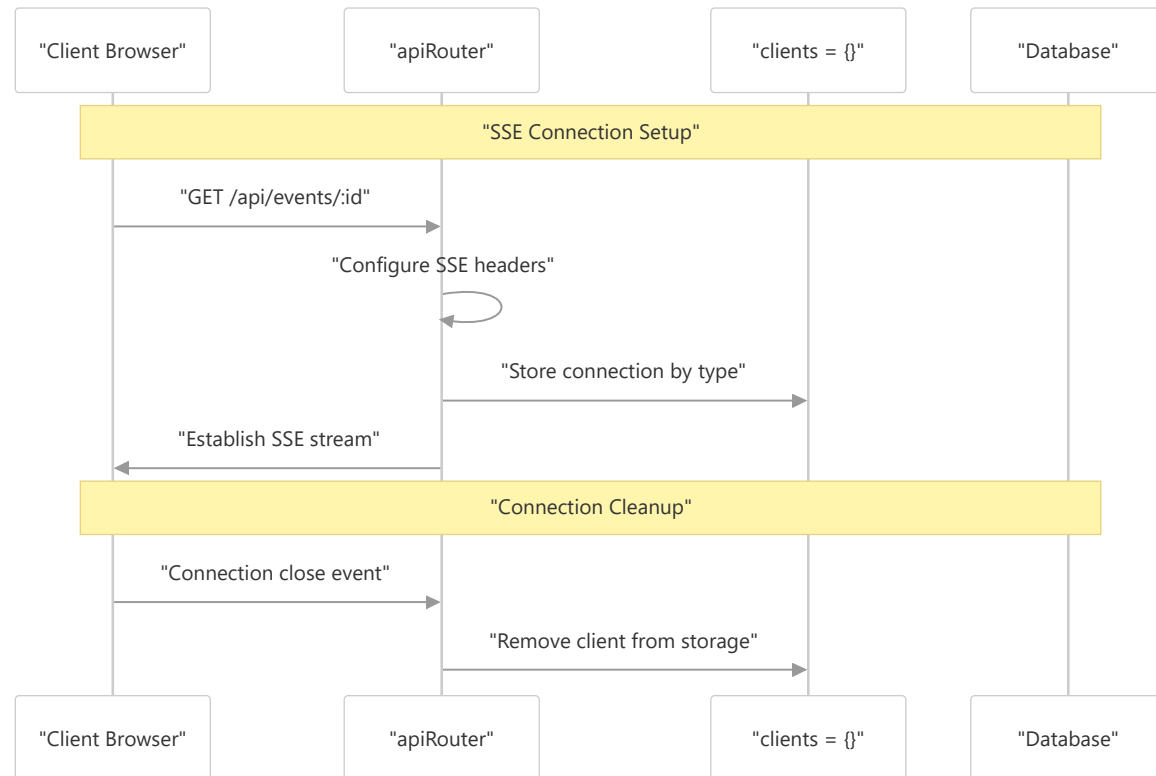
SSE Connection Management

The system maintains separate connection pools for different client types using a `clients` object that stores active SSE connections. Each connection is categorized to enable targeted message delivery.

Connection Storage Structure

| Connection Type | Purpose | Access Level |
|-----------------|---------------------------|----------------------------|
| Admin clients | Score updates, management | Authenticated users |
| Public clients | Live viewing, suggestions | No authentication required |

SSE Endpoint Implementation



The SSE endpoint at `/api/events/:id` handles client differentiation by storing connections with metadata about client type (public vs admin), enabling targeted message broadcasting.

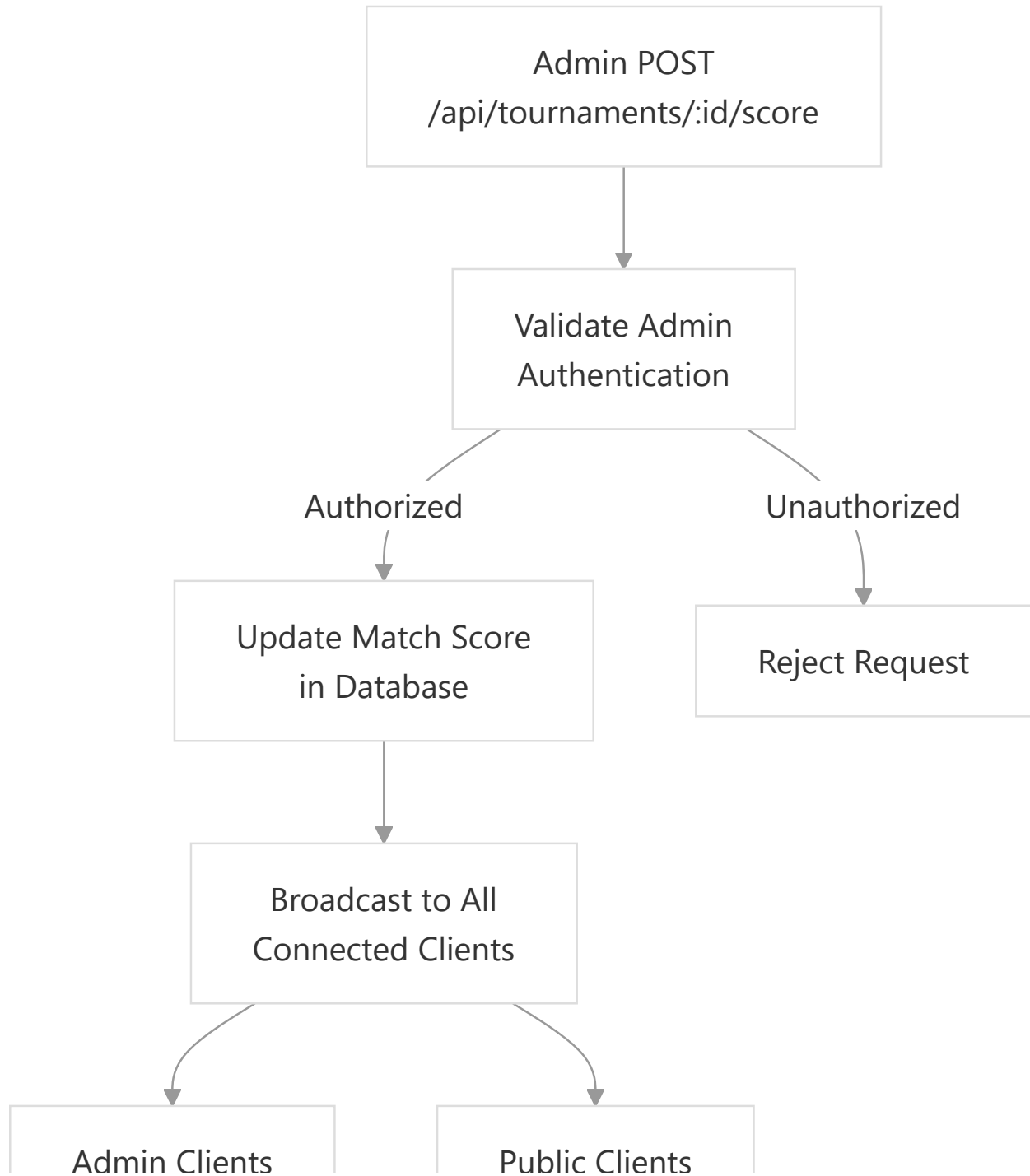
Sources: README.md | 138-139

Score Update Flow

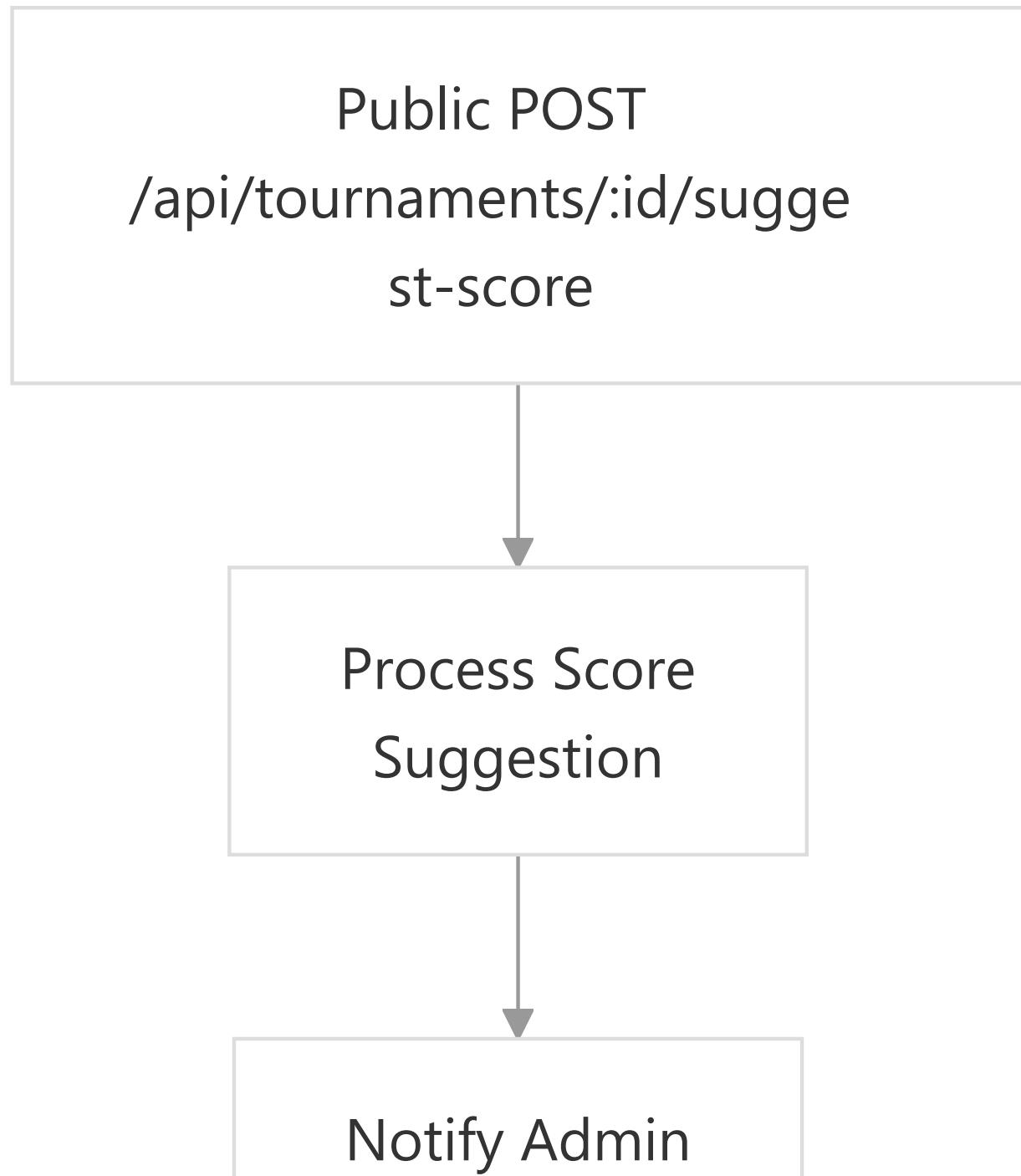
The real-time score update system supports two primary flows: administrative score updates that modify the database and broadcast to all clients, and public score suggestions that notify

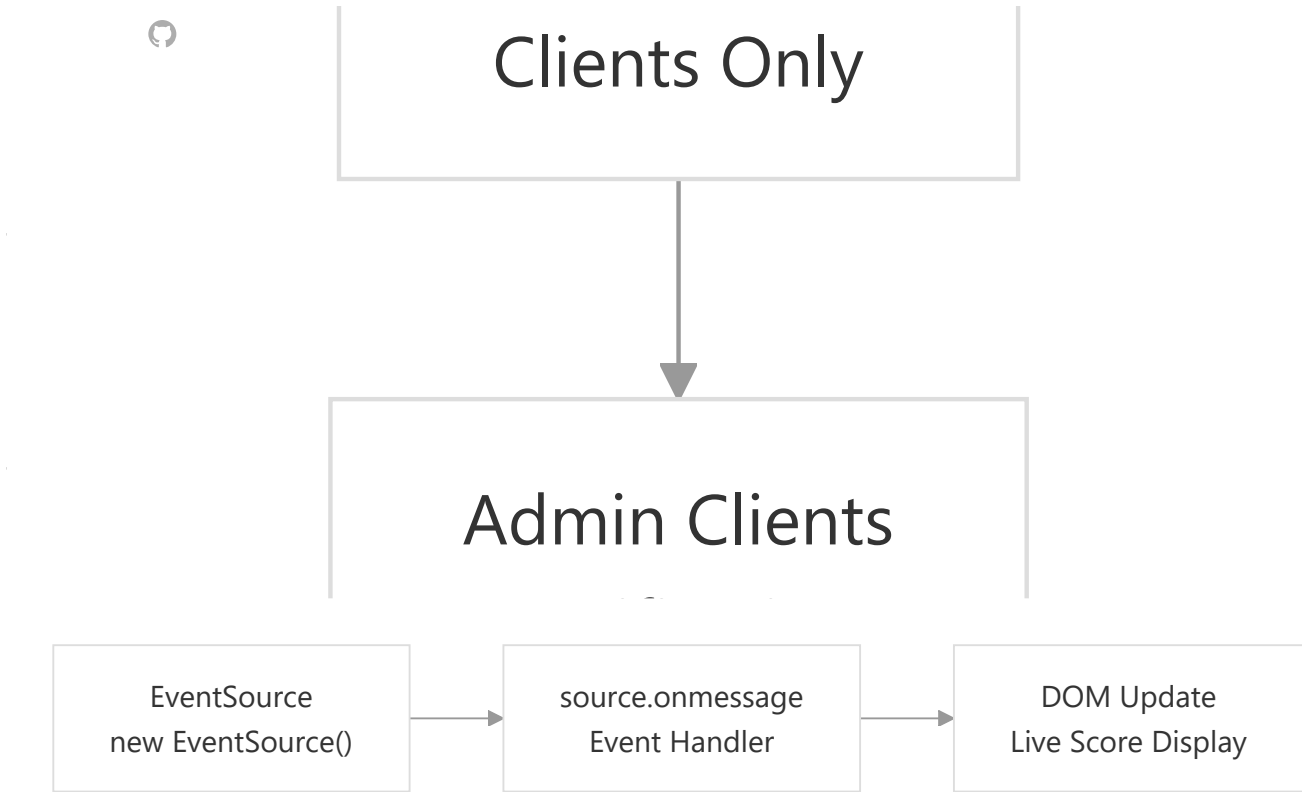
administrators only.

Administrative Score Updates



Public Score Suggestions





Message Processing Flow

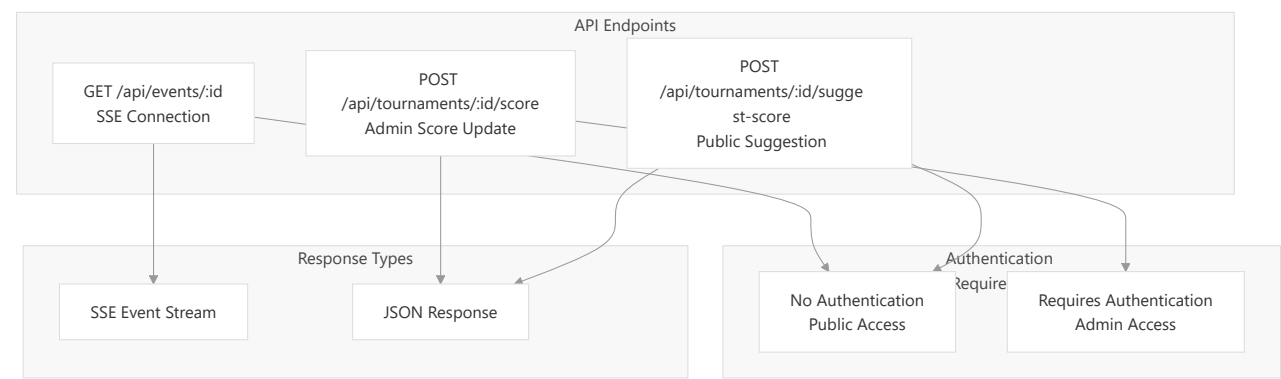
| Event Type | Handler | Action |
|-------------------|---------------------|---------------------------|
| Score updates | source.onmessage | Update live scoreboard |
| Suggestions | Admin notification | Display suggestion alerts |
| Connection status | Connection handlers | Manage reconnection |

Sources: README.md | 142-144

API Endpoint Specifications

The real-time system exposes specific API endpoints that handle different aspects of live tournament interaction.

Core Real-time Endpoints



Endpoint Behavior Matrix

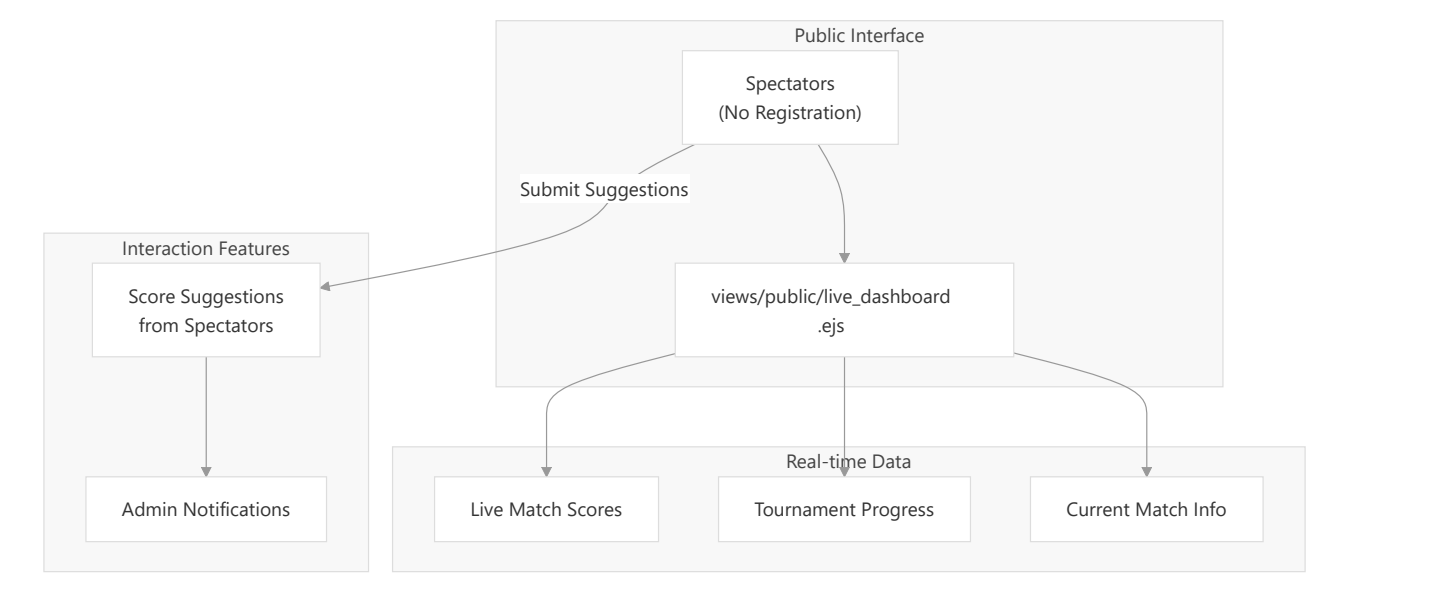
| Endpoint | Method | Authentication | Response Type | Broadcasting |
|------------------------------------|--------|----------------|---------------|---------------------|
| /api/events/:id | GET | None | SSE Stream | Receives broadcasts |
| /api/tournaments/:id/score | POST | Required | JSON | Triggers broadcast |
| /api/tournaments/:id/suggest-score | POST | None | JSON | Admin-only notify |

Sources: [README.md](#) | 138-140 [app.js](#) | 14

Wallshow Integration

The wallshow feature provides a public dashboard for tournament viewing without requiring user registration. This system integrates with the real-time features to display live tournament progress.

Wallshow Real-time Features



The wallshow receives real-time updates through the same SSE infrastructure, enabling spectators to view live tournament data and participate through score suggestions.

Sources: [README.md](#) | 6 [README.md](#) | 158-160 [README.md](#) | 217-224