RelayHub: A Resource-Efficient Real-Time Event Broadcasting Gateway

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Abstract

RelayHub is a lightweight, server-agnostic relay system designed to bridge traditional HTTP-based event sources with real-time client communication via persistent socket connections. Unlike conventional real-time systems that require full-duplex socket connections between both clients and servers, RelayHub streamlines the architecture by decoupling event emission from event delivery. Event-producing applications or services simply invoke RelayHub through standard HTTP calls whenever an event needs to be broadcast. RelayHub, in turn, maintains persistent WebSocket (or similar) connections exclusively with end users, acting as a smart intermediary. This separation eliminates the need for servers to handle and manage long-lived socket connections, significantly reducing overhead, simplifying deployment, and improving scalability under resource constraints. By serving as a centralized, always-on relay layer, RelayHub allows legacy systems and modern microservices alike to offer real-time features without an architectural overhaul. It is ideal for scenarios where real-time responsiveness is critical, but server-side socket infrastructure is impractical or undesirable.

Notice

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