Problem

Live broadcasting services require great technical and monetary resources, making it difficult for alternative services to be created. Existing solutions such as YouTube Live, Ustream, and Twitch have issues with requiring expensive centralized servers, additional third-party applications, or even paid subscriptions to broadcast.

Solution

Using the emerging web technology WebRTC, live video broadcasting can be implemented using peer to peer methods. WebRTC is a framework that allows web browsers to connect and send multimedia to each other directly. Users wanting to watch a live broadcast automatically connect to a user already watching the same broadcast — specified by the P2PCast server — who rebroadcasts it to them. P2PCast alleviates the need for expensive infrastructure and additional third-party applications for users.

WebRTC Connection Setup

WebRTC uses the concept of a handshake, where one peer makes an offer and the other side replies with an answer. WebRTC also requires that connection information be transmitted from one peer to another peer. This connection information is known as ICE, or interactive connectivity establishment, which is how both peers figure out how they are connected to the Internet.

Initially, assistance is needed to send these small messages between the two peers. The P2PCast server routes these messages between the peers until the connection has been established.