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Bi-Weekly Update: Analysis and implementation of scalable video streaming over P2P network Date: Feb 16, 2025

Overview

Over the past two weeks, a functional P2P video streaming simulation system has been set up. This update outlines the methods and packages chosen and integrated to support initial experiments.

Breakdown:

1. **Core Technologies**:
    - **dash.js**:
        - **Version**: 4.7.3 (CDN: https://cdn.dashjs.org/v4.7.3/dash.all.min.js).
        - **Purpose**: Provides the MPEG-DASH playback engine, extended with P2P capabilities.
    - **cdnbye-dashjs-p2p-engine (P2PEngineDash)**:
        - **Source**: https://cdn.jsdelivr.net/npm/@swarmcloud/dashjs
        - **Purpose**: Adds P2P offloading via WebRTC
        - **Integration**: Registered as a plugin with dash.js, configured with a Swarm Cloud token in US and tracker (wss://tracker.cdnbye.com)
    - **Puppeteer**:
        - **Purpose**: Automates the launch of browser instances to simulate multiple peers.
        - **Integration**: Launched by a script which initiate Chrome instances and simulates churn with a certain percentage of join/leave rate for a defined time interval.
2. **Development Environment**:
    - **Node.js**: 20.16.0.
    - **OS**: Ubuntu 24.10
    - **Components**: Chrome

Progress and Challenges

- **Achievements**:
    - Successfully confirmed video playback and P2P stats display.
    - Set up an automated P2P simulation with Puppeteer.
    - Established baseline metrics (startup delay, buffering, bandwidth) with real-time logging.