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**Paper Title:** Spotify – Large Scale, Low Latency, P2P Music-on-Demand Streaming

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**Year Published:** 2010

**Open questions for discussion in class:**

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| * Is it possible to crash Spotify by, say, randomly accessing the 40% of tracks rarely played in a very short time interval to overload server requests? * What protocol do other popular streaming services like YouTube, Netflix, Hulu, SoundCloud, Apple Music, Pandora, Tidal, etc. use? * Is it possible for a Spotify user to target other Spotify listeners who listen to specific music through the P2P TCP connection between them? |

**The topic areas covered by the paper are:**

The application of P2P techniques for music streaming services, and how Spotify combines P2P and server streaming.

**The previous approaches to this problem were:**

P2P techniques to on-demand streaming are more prevalent when it comes to video-on-demand services. Adapting P2P to audio-on-demand services includes addressing the difference in user behavior, the size of streaming objects, and the number of objects offered for streaming.

**Outline the basic new approach or approaches to this problem:**

The Spotify protocol is a proprietary network protocol designed for music streaming that combines server and P2P streaming through a TCP connection. It focuses on reducing server requests, though conservatively, while minimizing latency and stutter.

**Critical assumptions made include:**

The paper assumed its audience had basic knowledge about communication networks and connection types. Moreover, it assumed knowledge about the application layer.

**The performance of the techniques discussed in the paper was measured in what manner:**

The performance of the techniques discussed were measured by comparing the performance of the streaming protocol prior to implementation and after implementation. Data considered included connected users, tracks played, playback latency, stutter during playback, and data sources used by clients.

**What background techniques are used in the paper that you are not familiar with, and how could you find out more:**

Some techniques that the paper referenced that I was not familiar with included tracking, clustering, DHTs (Distributed Hash Tables), and Gnutella & BitTorrent protocols. Reading up to develop a stronger understanding of how these operate would help me find out more.

**The following terms were defined:**

Terms defined include playback latency, stutter, NAT traversal, and UPnP.

**I rate and justify the value of this paper as:**

A 5/5! It was very informative yet simple to understand!