Weekly Report:
Paper Study:
Title: CoolStreaming/DONe: A Data-Driven Overlay Network for Efficient Live Media Streaming
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This paper presents a BT-like Data-Driven Overlay Network for Efficient Live Media Streaming, DONet. DONet doesn't have a structured overlay and selects partners to pull needed data segments from them. These features make it different from tree-based protocols and gossip-based protocols. Every node of DONet keeps a membership cache containing parts of identifiers for active nodes. And similar to BT protocol, it selects partners from them, exchange the Buffer Map representation, then use schedule algorithm to fetch needed data. Though the DONet doesn't have a structured overlay, authors use a Breath-First Search tree to model it and calculate the radius. It comes out that the average distance from the origin node to a destination node is bounded by O(logN). In the experiments on PlanetLab, authors also give comparison experiments between DONet and tree-based overlay. The conclusion is that the DONet has better continuity index and less latency(measured by overlay hop count).

The excellent point of this paper is that it implements a Live Media Streaming Network without structured overlay. The tree-based protocols consider that earlier participating nodes have buffered data which are needed for later participants in Live Streaming. According to this, it constructs the tree structure to transfer the data, while the DONet periodically establishes new partnerships with nodes randomly selected from its mCache. I believe that the gradually optimized periodical establishment may also gradually make the DONet overlay stable and structured due to the live streaming feature. And I believe this is the difference between the BT file sharing protocol and the BT-like Streaming protocol.

The paper adopts the random selection of partners in the periodical establishment. And it doesn't give more details about the method. Maybe it will take long for the DONet's overlay to become stable to adopt this method. In the experiments on the PlanetLab, it gives comparisons between DONet and Tree-based Overlay and gets a set of data showing that DONet has better continuity index and less latency. However, under the specific experiment environment, the comparison is limited. Maybe in some situation, the performance of Tree-based Overlay is better. What's the situation is also a problem.