Weekly Report

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Locality of P2P live streaming

Heterogeneous Situation

In the heterogeneous situation, the peers' bandwidth are different. Assume there are h classes of peers. The upload capacity of each class is u^i, and $u^1 < u^2 < u^3 < ... < u^r < ... < u^h$. There are p^i percentage of u^i peers. Assume in one time slot u^i could only transmit i chunks. And the playback rate of the streaming is r chunks per time slot.

For one peer, if it builds a connection with one class i peer, then, the probability for this peer to get chunk j from this class i peer is

$$\begin{aligned} q_i(j) &= [1 - p(j)]p(j)s_i(j); \\ if j < ts_t(j) &= 1 - p(1); \\ if j >= ts_t(j) &= 1 - p(j - t + 1); \end{aligned}$$

To be edited.