

Dual-threshold buffering

Is a technique to improve the user experience for streaming video viewing.

Streaming

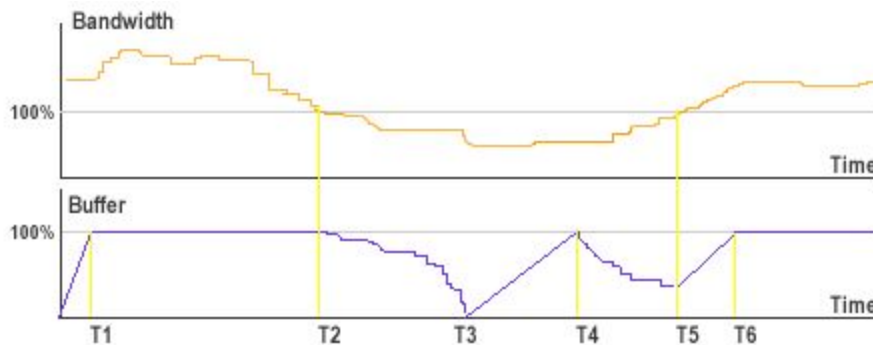
According to wikipedia:

Streaming media is multimedia that is constantly received by and presented to an end-user while being delivered by a provider. Its verb form, "to stream", refers to the process of delivering media in this manner; the term refers to the delivery method of the medium rather than the medium itself.

A client media player can begin playing the data (such as a movie) before the entire file has been transmitted. Distinguishing delivery method from the media distributed applies specifically to telecommunications networks, as most other delivery systems are either inherently streaming (e.g., radio, television) or inherently non streaming (e.g., books, video cassettes, audio CDs).

To achieve this video delivery technique a buffer is required in order to cope with sudden bandwidth changes which would cause the video to stall or skip parts of it.

For the static buffering a time is set for the application buffer, this buffer time is the minimum time of video loaded needed to start playing.



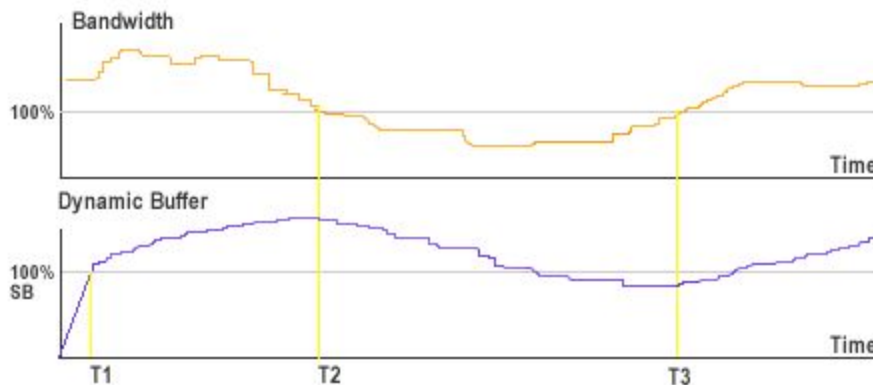
Standard static buffering graphic showing how the buffer size changes according to the bandwidth.

Dual-threshold buffering

In order for the video to start playing as soon as possible you need a short buffer, but after the start the buffer should be much longer to withstand possible bandwidth shortages.

Dual-threshold buffering assures a better allocation of excess bandwidth because it uses it to expand the buffer to a final, higher value while playing the movie at the same time. The movie can start after a short preloading time and the excess bandwidth can be used to build a big reserve of data to counteract the likelihood of future drops in bandwidth.

This technique is implemented by setting a small buffer size and changing it to a bigger when the video feed starts playing. Seeking the video should also be taken in consideration as if the video just started playing.



This dynamic buffering technique can guarantee a quick video start time and at the same time give a solution to bandwidth fluctuations.

Implementation

For the episodes which only contain one media element, we decided to have a big buffer, as there is no other choice of playback this only media will load.

When this is the case the buffer size would be 60 seconds (the max buffer size supported by flash), but when for the video to begin playing it would need to load the whole buffer, so this solution provided a way to deliver the user a better experience when playing this videos.

The buffer will start with a size of 2 seconds, to assure it begins playing asap, as soon as the video starts the buffer is set to 60 seconds. If any bandwidth issue should happen that would drop the buffer length(buffer actually loaded) to 0 then the buffer size would be switched back to a 2 seconds, that way the video will start again in no time. This same behavior is exhibited when seeking.