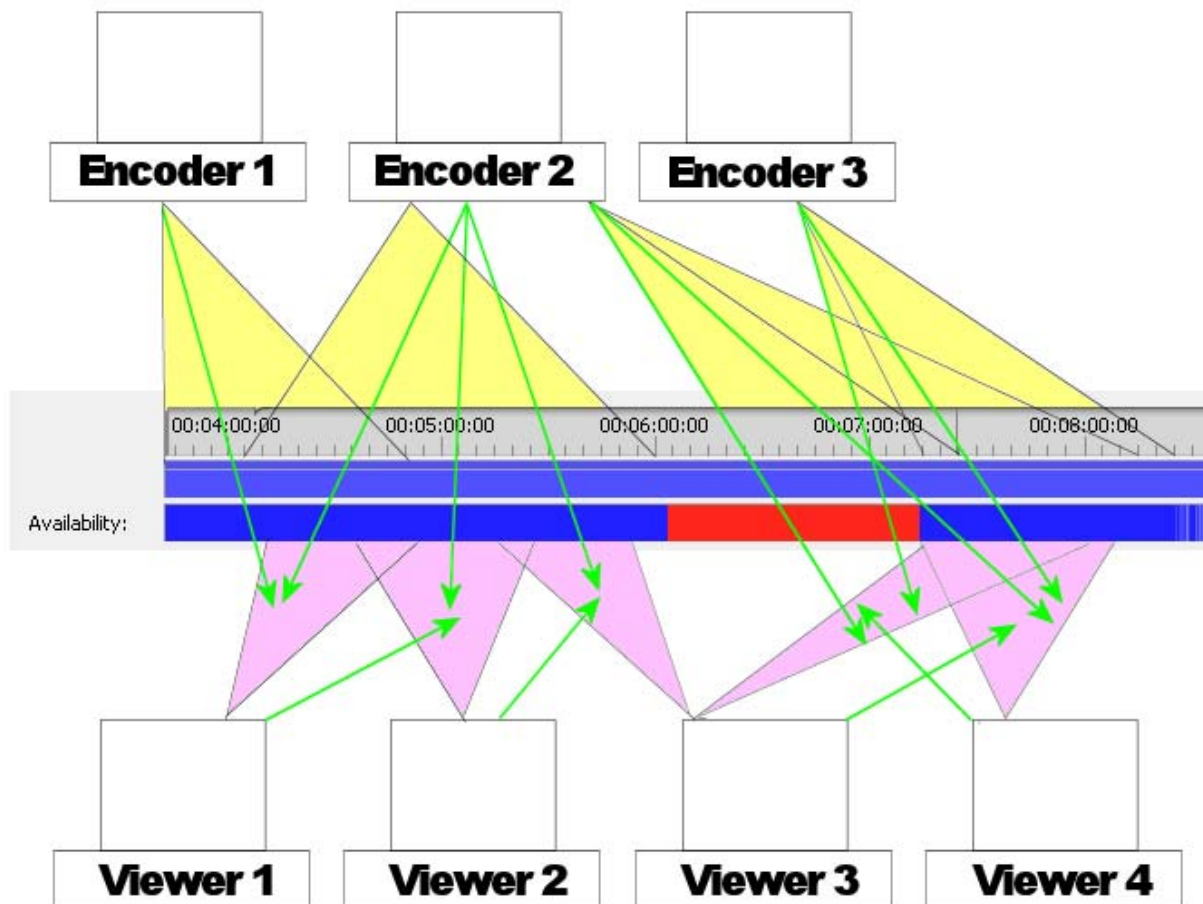


Chunkstream.

A method for viewing video or audio streams using multiple encoding sites via peer to peer networking.



The grey area in the middle is the Chunkstream concept which may or may not be controlled by a tracking server – It only exists in definition (ie. There is no physical server or file there) and will be referred to as the **Chunkstream**.

The chunkstream describes a streaming video or audio channel which is split into timed chunks – eg. each chunk is 10seconds of streamed content. Referred herein as the **Chunk or Chunks**. Each chunk would be identified by a unified timing system so that the same point in the stream can be located from any source.

Each Chunkstream would have an identity, possibly contained in file, which relates to information on what it contains (eg. which TV channel) and other information about the video/audio quality.

There may be any number of encoders and viewers, collectively called peers. A tracking server would be used to keep track of which peer has which chunks and control use of bandwidth etc. A virtual tracking server could be created if each of the peers kept this information, and so negate the need for a physical tracking server.

The yellow areas signify the times at which each of the encoders were operating and therefore which of the chunks they have created and therefore have available to download or stream. What is not shown (for clarity) is that any of the encoders (like any other peer) can download from any other peer to fill in any gaps they may have.

The pink areas show the times which a viewer wishes to watch. They would have an application to play the Chunkstream.

In the player they would then select any time in the past which they wish to watch. This could be from just moments ago to any time previously.

The player application would then download the relevant chunks of Chunkstream (if available – blue/red in diagram) from any peers to which it can connect, as shown by the green arrows. Possibly giving precedence to those with higher video quality, connection speed/reliability or some kind of user rating.

It can either download each chunk and then play, or stream from the peer – ie. Play instantly and reduce quality if bandwidth is restricted to ensure no breaks in play etc.

While it is downloading and/or streaming a chunk from a peer, it can download another chunk or chunks which it will need, ready to play when the player reaches that point. A group of chunks (ie. A certain time period) could be downloaded in advance ready to play at a later stage, or just to have available for others to download/stream.

As the chunks are defined by time they can be seamlessly played consecutively to create one stream from many sources.

As each of the chunks is viewed, it is stored and so is then made available to other peers to download.

Encoders can work with both live streams or can take a previously recorded file and place it into the correct time slot.

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