Large-Scale Streaming Video Servers – Towards an Everything-On-Demand Future

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Since the early 90s, technologists and visionary business leaders from a group of pioneering companies in the content, computer, networking, consumer electronic, television broadcast, and cable TV businesses have been working to change the way we watch and interact with our television. They have been working towards an everything-on-demand future. This includes news on demand: news you want to watch, not what the broadcasters send your way through the airwaves; music-on-demand: any tune ever composed; education on demand: want to listen to Hennessy's lectures in Stanford from your living room?; sports on demand: want to relive the memories of Pele's most famous goal in the 1962 World Cup?

Realizing such a vision requires the commercially viable implementation of a delivery technique sometimes referred to as extreme narrowcasting — the ability to deliver a unique stream of a time-based media (such as audio or video) from the source of the content (typically video servers) to an end-user's PC or TV. High-quality video is typically orders of magnitude larger than any other multimedia data type we encounter today, and the delivery of personalized video to large audience raises very interesting research issues.

In this talk, we will look at the drivers behind the move to an everything-on-demand future, the technological challenges associated with realizing this vision, and the novel approaches being considered by the research and development community. We will pay particular attention to the trends in video server design and the approaches to deploying video servers in different network architectures to solve this challenging problem.

Keywords:

Streaming: A technique for transferring data (typically audio or video data) from a source (such as a video server) to a client (such as a PC or a TV) such that it can be processed as a steady and continuous stream at the client, without requiring local storage.

Everything on demand: Personalized delivery of content from a vast array of content sources to an end user.

Narrowcasting: Delivery of information directed to a highly specific segment of the public (as opposed to broadcasting, which is directed to a very large segment of the public). Extreme narrowcasting, where the information is directed to one or a relatively few users at a location, is even more specialized delivery.

Video servers: Specialized systems (hardware and server) that are designed to stream time-based media (such as audio/video) efficiently.