

Improving IPTV On-demand Transmission Scheme for Broadband Network

Boris Goldshtein, Gerges Mansour
 St-Petersburg State University of Telecommunications
 St-Petersburg, Russia
 gergesmansour@yahoo.com

Abstract

The latest technologies such WIMAX are able to provide wide range coverage, high data rates, secured transmission, and mobility supported at vehicular speeds. It should have high QoS to transmit audio, video, voice, data services such like video gaming, mobile IPTV. IPTV is originally to warded to fixed terminals like set top box. However it is developed for fixed and mobile convergence according to the future trends and requirements for mobility support. Video on Demand (VoD) service, which presents the requested video can be watched anytime anyway, will be major portion rather than following fixed schedule. The Video-on-demand (VoD) service over IP based network is increasingly provided with dedicated unicast stream. In the VoD server's point of view, this unicast transmission is simple and makes no problem when there is enough capacity or the service request arrival rate is moderately low. However, in the real world, the video request popularity is highly skewed, so there are often concentrated requests for one particular content and burst requests in case of special events. Those cases are critical for the unicast transmission servers because the server's capacity is limited from its initial design so it results in high service blocking probability. by transmitting highly requested videos through multi-session multicasting and normal videos with unicast, we have achieved improvement on service blocking probability.

VoD systems can be categorized into True-VoD (TVoD), which is based on unicast transmission, and Near-VoD (NVoD), which is based on broadcast or multicast transmission, how videos are delivered In TVoD, the system reserves dedicated transmission channels from server resources to each client so that clients can receive video data without any delay via dedicated transmission channels as if they use their own VCR. However, may easily run out of the channels because the channels can never keep up with the growth in the number of clients. On the other hand, in NVoD, clients have to wait by some delay time because content is multicasted over several channels with a periodical cycle. The number of broadcasting channels is due to the allowable viewer's waiting time, not the number of requests. Thus, this approach is more appropriate for popular videos that may interest many viewers at a certain period of time. Clearly, the popularity of access pattern of video objects plays an important role in determining the effectiveness of a video delivery technique.

IPTV service, especially Video on Demand (VoD) service like famous sport games, popular movies will be a technology winner in the near future. Multicast transmission will be used in mobile IPTV over wireless access network like LTE and WiMax by maintaining its QoS. In this paper, we will look multi-channel multicast algorithm to allocate content packets into several channels over WiMax. The advances in broadband Internet access and scalable video technologies have made it possible for Internet Protocol television (IPTV) to become the next killer application for modern Internet carriers in metropolitan areas. In this article, we propose a crossbreed Transmission scheme for on-demand mobile IPTV service over broadband access network. Proposed algorithm utilizes hybrid mechanism which combines multi-channel multicasting and unicast scheme to enhance not only service blocking probability but also reduce overall bandwidth consumption of the IPTV networks. In order to evaluate the performance, we compare proposed algorithm against traditional unicast and multicast schemes.

Index Term: VoD, IPTV, True-VoD, Near-VoD.