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Streaming Media Congestion Control using Bandwidth Estimation on Multi Networks

TH. Chanulembi ,S. Surya ,S. Fowjiya
Vivekanadha college of Engineering for Women (Autonomous),
Thiruchengode, Tamilnadu, India

Abstract-Video streaming distortion aware is a goal of minimizing the distortion of the received videos .It has Numerous application, including Mobile device connecting To multiple licensed and ISM Bands .And cognitive multi radio device employing spectrum Scheduling but the integer program is not computationall traceable so Heuristic algorithm which is SRDO and PRDO is develop for packet scheduling reduces the distortion of videos.

Keyword-*Simple rate distortion optimization, progress rate distortion optimization , round-trip time.*

1.INTRODUCTION

The mobile data traffic will increase 39 times over a span of five years, and 66% of the increase of data traffic will be due to mobile videos which was indicated by market research. So it need to be care full to support high quality real-time video streaming. In wireless networks, one way to achieve the best possible streaming quality is to leverage all available wireless spectra by connecting the streaming server to each client via multiple access net works ,in which it is refers to the clients capable of connecting to multiple access networks as multi-network or Potential application scenarios of streaming videos to: 1) Multiradio, wireless devices associated to different Industrial, Scientific, and Medical (ISM) bands . 2) cognitive multi radio clients employing spectrum bonding and 3)A streaming server may transmit a video concurrently over multiple access networks to multi-network client. This is due to transmitting a sub stream at a low rate that under utilized the network resources. Such type of conversion is referred as stream adaptation, In contrast, *scalable video coding*, such as the H.264/SVC standard supports efficient stream adaptation and allows service providers to save expenses on deploying streaming servers and trans coders.

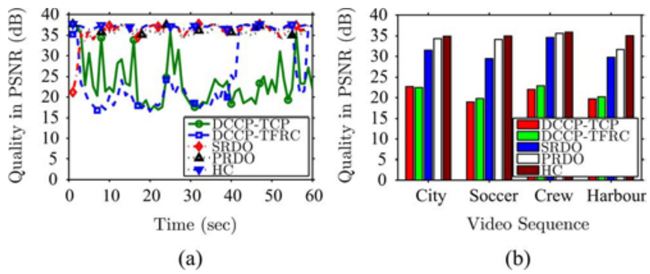

Fig. 1. Streaming rate achieved by the different algorithms: (a) 60-s sample results from *City* and (b) overall results.

A concurrently competing for the same access networks (cf. Fig. 1) is presented in this paper . The problem of streaming videos to multi network clients and formulate an optimization problem is lifted to ascertain, for each client as by

1) Streaming the rate over each access network
2) The video packets to be transmitted and
3) the access network over which each transmitted video packet is sent.

2. BACKGROUND AND PAST WORK

The joint rate control and packet scheduling problem as an integer program is being formulated as where the objective is to minimize the cost function of the expected video distortion .So, the heuristic algorithms analyze the complexity, study their performance of packet scheduling and derive convex programming approximations to this problem.An investigation is done extensively on rate control for non scalable video streams. An algorithm is proposed by Chakareski and Girod to enable a streaming server to decide which packets transmit over which network paths so as to meet the predefined bandwidth constraints .Szwabe *et al* propose an architecture to monitor network conditions and control the streaming rate over a single access network. Jurca and Frossard study the problem of rate control for video streaming over a multi hop network ,assuming *known* packet loss rates and available bandwidths for each network link. There has been a wide range of methodologies summoned to direct the resource allocation problem of video streaming. Amonou *et al* prioritized the problem of video packets of H.264/SVC streams *and* calculated the distortion impact of dropping each video packet and give higher priorities to video packets with higher impact values.

3. PROPOSED METHOD

The Streaming Media Congestion Control protocol (SMCC), a latest adaptive media streaming congestion management protocol in which the connection's packet transmission rate is adjusted according to the dynamic bandwidth share of the connection. The bandwidth share of a connection is estimated using algorithms similar to those introduced in TCP Westwood. This algorithm avoids TCP Slow Start phase. The fundamental challenge in streaming media over the Internet is to transfer the highest possible quality, stick to the media play out time constraint, and fairly share the available bandwidth with some transport protocols and other traffic types. SMCC is able to adapt the sending rate ,according to the connection estimated bandwidth share, is fair to existing connections, and does not suffer from pronounced sending rate oscillations typical of most window protocols.

Symbol	Description
U	Number of clients
N	Number of access networks
u	User u
n	Network n
m	Frame m
q	Quality layer q
c_n	Available bit rate of network n
τ_n	Round-trip time over network n
$r_{u,n}$	Streaming rate of client u over network n
p_n	Packet loss probability over network n
t_n	One-way delay over network n
W	Scheduling window
M_u	Number of frames in u's window
Q_u	Number of quality layers for u's video
$g_{u,m,q}$	NALU of user u, frame m, layer q
$s_{u,m,q}$	Size of $g_{u,m,q}$
$x_{u,m,q,n}$	Decision variable for sending $g_{u,m,q}$ over network n
$d_{u,m}$	Total distortion of client u's frame m
$e_{u,m}$	Truncation distortion of client u's frame m
$y_{u,m}$	Drifting distortion of client u's frame m
F_u	Frame rate of client u's video
$C(\cdot)$	Cost function

Fig. 2. Symbols used in the paper

1. ***System Architecture***-In the above table it summarizes the symbols used in the paper. A multi network scalable streaming system consists of a scalable streaming server containing a database of scalable videos, and U multi network client. When requested by a client, a video stream is divided into N sub streams (each transmitted over a distinct network) by a video splitter that further controls the rate of each sub stream to ensure timely delivery of video packets. For each client, the server sets up a connection over access ne work and transmits sub stream n(1≤n≤N) over access network. The video stream is then fed to a video decoder. Access networks are heterogeneous and time-varying, so periodic measurements of the ABR, c_n as well as the RTT, it is carried out for each access network. In this implementation a light-weight tool called Abing is opted although our algorithms are clearly independent of such a measuring tool.

2.***Network model***-Take a given user u (1≤u≤u) , let r_ (u, n) be the sub stream rate over access the network n and the total streaming rate for the net.. For access net work , we use to denote the packet loss probability, which accounts for losses due to packets missing them play out deadlines. We assume that access networks are statistically independent and write , where is increasing in and decreasing in .While our analysis can accommodate various queuing models [15] in defining , we adopt the M/M/1 model that was shown to yield a good approximation in typical streaming applications per previous measurement studies . We denote the play out deadline3 by defining the average one-way delay by The one-way delay can be related to the residual bandwidth by where is a parameter estimated from past observations of via linear regression. The number of decision variable can be controlled by simplifying the scalable stream Structures, hence trading Streaming optimality for short running time in the case of many users. One of our future tasks is to transform our current architecture toward client-driven Solutions. 3GPP/MPEG DASH, which is getting popular nowadays will be more suitable for client-driven HTTP Streaming to the resulting distributed algorithms.

CONCLUSION

In this paper to implementing and designed for multimedia applications in mobile ad-hoc networks is caused by MANET's dynamic and random behavior. SMCC mechanism outperforms TCP congestion control mechanism and thus is well suited for applications like multimedia streaming in MANET. SMCC minimizes packet drops caused by network congestion as compared to TCP congestion control mechanism, it still suffers from packet drops, but it comprises of complete simulation criteria for considering the resolution of specified objectives and their problem reports simultaneously, that is, the behavior of routing protocols in MANETs by considering the realistic attack traces. The three metrics of packet delivery ratio, end to end delay, throughout are evaluated using AODV protocol in three density regions of low density, medium density and high density in network scene as well as in node point. In our future work have to implement the bandwidth allocation for each type of packets and then use memory allocation for network.

REFERENCES

[1] M. Megna, "AT&T faces 5,000 percent surge in traffic," Oct. 2009 [Online]. Available: http://www.internetnews.com/mobility/article.php/3843001.

[2] "CVX: Matlab software for disciplined convex programming," 2009 [Online]. Available: http://www.stanford.edu/~boyd/cvx/

[3] K. Fitchard, "T-Mobile's growth focusing on 3G," 2009 [Online]. Available: http://connectedplanetonline.com/wireless/news/t-mobile-3g-growth-0130

[4] Cisco Systems, San Jose, CA, "CiscoVisualNetworking Index forecast Web site," 2010 [Online]. Available: http://www.cisco.com/go/vni

[5] Stanford University, Stanford, CA, "Abing project page," 2004 [Online]. Available: http://www-iepm.slac.stanford.edu/tools/abing/

[6] T. Alpcan, J. Singh, and T. Basar, "Robust rate control for heterogeneous network access in multihomed environments," *IEEE Trans. Mobile Comput*, vol. 8, no. 1, pp. 41–51, Jan. 2009.

[7] I. Amonou, N. Cammas, S. Kervadec, and S. Pateux, "Optimized ratedistortion extraction with quality layers in the scalable extension of H.264/AVC," *IEEE Trans. Circuits Syst. Video Technol.*, vol. 17, no. 9, pp. 1186–1193, Sep. 2007.

[8] D. Bertsekas, *Convex Optimization Theory*. Belmont, MA: Athena Scientific, 2009.

[9] S. Boyd and L. Vandenberghe, *Convex Optimization*, 1st ed. Cambridge, U.K.: Cambridge Univ. Press, 2004.

[10] J. Chakareski and B. Girod, "Rate-distortion optimized packet scheduling and routing for media streaming with path diversity," in *Proc. DCC*, Snowbird, UT, Mar. 2003, pp. 203–212.

[11] P. Chou and Z. Miao, "Rate-distortion optimized streaming of packetized media," *IEEE Trans.n Multimedia*, vol. 8, no. 2, pp. 390–404, Apr. 2006.

[12] K. Evensen, T. Kupka, D. Kaspar, P. Halvorsen, and C. Griwodz, "Quality-adaptive scheduling for live streaming over multiple access networks," in *Proc. ACM NOSSDAV*, Amsterdam, The Netherlands, Jun. 2010, pp. 21–26.

[13] N. Freris, C. Hsu, X. Zhu, and J. Singh, "Resource allocation formultihomed scalable video streaming to multiple clients," in *Proc. IEEE ISM*, Taichung, Taiwan, Dec. 2010, pp. 9–16.

[14] P. Fuxjager, H. Fischer, I. Gojmerac, and P. Reichl, "Radio resource allocation in urban femto-WiFi convergence scenarios," in *Proc. Euro-NF NGI*, Paris, France, Jun. 2010, pp. 1–8.

[15] D. Gross, J. Shortle, J. Thompson, and C. Harris, *Fundamentals of Queueing Theory*, 4th ed. Hoboken, NJ: Wiley-Interscience, 2008.