Vol. 5, Issue. 3, 2018, ISSN 2349-0780

MODELLING OF PROTECTED MULTIMEDIA STREAMING APPLICATION OVER CLOUD ENVIRONMENT

Dr Ramesh Shahabadkar[1] Krutika Ramesh Shahabadkar[2]

[1]Vardhaman College of Engineering, Shamshabad,Hyderabad, Telangana State

[2]Accenture Solutions Pvt Ltd, Global Village, Mallasandra,Bengaluru, Karnataka State

Abstract- *The vital aspect of streaming multimedia application over cloud environment by optimizing quality of services(QoS) of resources. The various launching services of the cloud are exploited in achieving the same. The proposed system achieves cost effective approaches in bandwidth utilization while streaming protected multimedia application over cloud environment.*

Keywords: multimedia, streaming, cloud environment, quality of service, bandwidth utilization.

Introduction: Streaming multimedia application over network has gained popularity. The recent developments in cloud environment has given rise to multimedia streaming. This paper discusses about protected multimedia streaming with cost effective bandwidth utilization by optimizing quality of services of resources.

Related Work: The meaning of multimedia is dealing with audio clipps, text clips, animation,video and interactivity content forms delivered electronically. Multimedia is classified into two types i.e. linear and nonlinear. Multimedia building aspect comprises of six steps

a. Analysis
b. Design
c. Development
d. Testing
e. Implementation
f. Evaluation .[1]

With the advent of new upcoming online video services such as IPTV, video on demand (VoD) and peer-to-peer (P2P) video streaming, content providers are gaining more and more interest in measuring and monitoring video quality as perceived by end-users; also known as quality of experience (QoE). Objective video quality metrics provide a means of measuring visual quality degradations but in order to be able to measure QoE, these objective metrics should incorporate all quality affecting parameters such as encoding bitrate, network impairments and error concealment techniques. As a consequence, in order to construct or validate a proper objective video quality metric, extensive video evaluation tests must be performed [2].

The xStreamer intends to be a flexible and modular open source streamer. The selection of current open source streamers which support both video and audio is limited, with VLC Media Player, Darwin Streaming Server and Helix DNA Server being the foremost solutions. The xStreamer distinguishes itself by providing a modularity that goes beyond the mere modular programming offered by the current open source solutions and that manifests itself in how the user controls and configures the streamer [3].

The VideoLAN project provides a complete streaming solution that is ready to be deployed in an enterprise or home streaming system. It includes a streaming server, client and mini SAP server for multiple platforms [4].

With the growth of high speed networks over the last decades, there is an alarming rise in its usage comprised of thousands of concurrent e-commerce transactions and millions of Web queries a day. This ever-increasing demand is handled through large-scale datacenters, which consolidate hundreds and thousands of servers with other infrastructure such as cooling, storage and network systems. Many internet companies such as Google, Amazon, eBay, and Yahoo are operating such huge datacenters around the world. The commercialization of these developments is defined currently as Cloud computing [6], where computing is delivered as utility on a pay-as-you-go basis. Traditionally, business organizations used to invest huge amount of capital and time in acquisition and maintenance of computational resources [5].

It is well-known that cloud computing has many potential advantages, there are still many actual problems that need to be solved and data are migrating to public or hybrid cloud. According to the analysis for data security, it is expected to have an integrated and comprehensive security solution to meet the needs of defense in depth. For data security issues, the primary challenges are separation of sensitive data and access control. In future objective is to design a set of unified identity management and data security based framework across applications or cloud computing services [8].

Quality of Service (QoS) plays a critical role in the affective reservation of resources within service oriented distributed systems and has been widely investigated in the now well established paradigm of Grid Computing. The emergence of a new paradigm, Cloud Computing, continues the natural evolution of Distributed Systems to cater for changes in application domains and

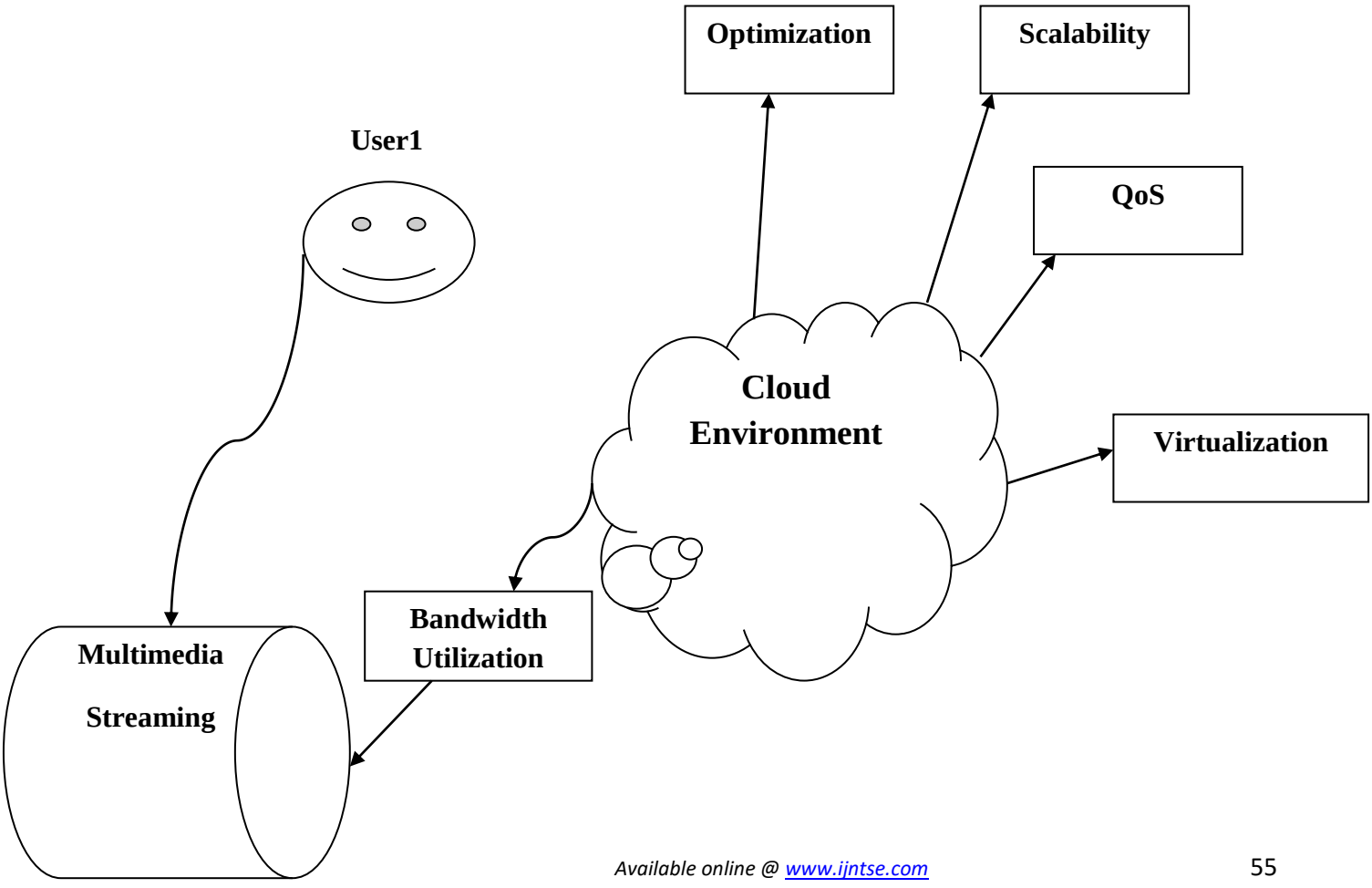
Vol. 5, Issue. 3, 2018, ISSN 2349-0780

system requirements. Virtualization of resources, a key technology underlying Cloud Computing, sets forth new challenges to be investigated within QoS and presents opportunities to apply the knowledge and lessons learnt from Grid Computing. QoS has been an issue in many of the Distributed Computing paradigms, such as Grid Computing and High Performance Computing. The aim of this paper is to address QoS specifically in the context of the nascent paradigm Cloud Computing and propose relevant research questions [12].

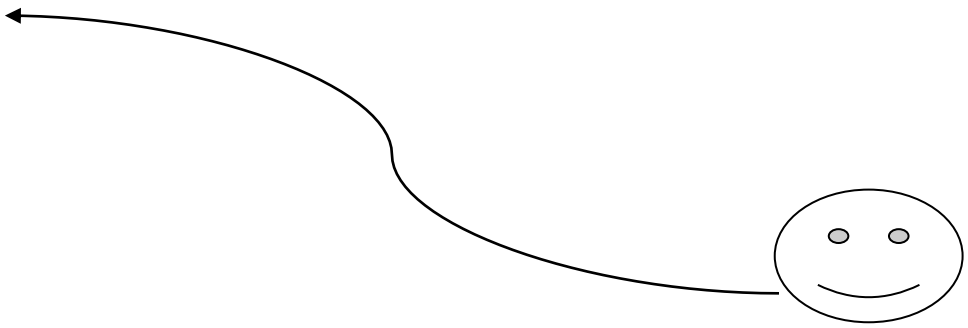
Bandwidth Utilization means efficient use of the available bandwidth to achieve specific goals.
There are various methods to calculate bandwidth like multiplexing and anti-jamming. Apart from these there are other proposed algorithms as well.
In TCP networks, such as the Internet, there is no central authority which allots bandwidth to hosts. Instead, individual hosts are responsible for setting their sending rate appropriately.
Each host would like to send data as fast as possible, but if they all do this, router queues throughout the network overflow and start dropping packets, which dramatically reduces network utilization. Such a congestion collapse was a frequent occurrence on the Internet in the 1980s. Thus there is an inherent tension between the interests of the hosts and those of the network designer [13].
In the 1980s, network designers introduced end-to-end congestion control [14]. In these schemes an individual host notices that its packets are being dropped, and adjusts its sending rate down in the hope of preventing future congestion. Specifically, in current implementations it halves its rate (this is termed multiplicative decrease). If, on the other hand, the host's packets are getting through, it increases its sending rate by 1 (additive increase) because it speculates that the network might be under-utilized. This protocol, called additive-increase-multiplicative-decrease (AIMD), has proved successful in preventing congestion problems on the Internet [13].

Proposed System: The proposed system captures high definition video by camera or use existing high definition video, by encoding frames of the multimedia application using H.264 encoding algorithm and broadcast the optimized multimedia stream frames by reducing size of the frames using QoS of resources. The cost effective approaches in bandwidth utilization are used in application layer QoS regulator to prevent congestion and error regulator to optimize maximum multimedia streaming of application over cloud environment. The rate regulator can be either source-based or receiver-based. Source-based is ideal for unicast video and receiver-based is ideal for multicast video.

Multimedia Streaming Over Cloud Environment



Vol. 5, Issue. 3, 2018, ISSN 2349-0780



User2

Conclusion: As cloud provides a robust environment in any kind of service, our proposed system uses it for transferring multimedia applications. The proposed system uses H.26 encoding algorithm to reduce the size of the stream frames. Cloud provides reliability, virtualization and a very high Quality of Service.

For efficient bandwidth utilization we can use various algorithms already available in the market. There is a rate regulator used in the proposed system that can be either source based or receiver based. Source-based is ideal for unicast video and receiver-based is ideal for multicast video.

The proposed system is cost effective and provides high degree of scalability. It is robust in nature and large multimedia clipps can be transffered with high security.

References:

[1]. Dr. K. Nachimuthu," Improve the attitude and perception abilities through Multimedia in Biology", International Journal of Educational and Psychological Research (IJEPR) Volume 1, Issue 1, pp: 1-5, July 2012.

[2]. Nick Vercammen, Nicolas Staelens, Alexis Rombaut, Piet Demeester," Extensive video quality evaluation: A scalable video testing platform", IEEE Xplore, Conference: Computer and Information Technology, 2008. ICCIT 2008. 11th International Conference.

[3]. Alexis Rombaut, Nicolas Staelens, Nick Vercammen, Piet Demeester," xStreamer: modular multimedia streaming", Conference: Proceedings of the 17th International Conference on Multimedia 2009, Vancouver, British Columbia, Canada, October 19-24, 2009.

[4]. Jean-Paul Saman," Streaming networks with VLC",2006.

[5] Ramesh Shahabadkar and Ramachandra Pujeri, "Modelling of secured video streaming application using RFC 3711 in P2P Network", International Journal of Computer Engineering & Technology(IJCET),ISSN 0976-6367,Vol 5, Issue 8, pp32-47,August 2014.

[6]. Buyya, R., Yeo, C.S. and Venugopal, S. 2008. Market-oriented Cloud computing: Vision, hype, and reality for delivering it services as computing utilities. Proceedings of the 10th IEEE International Conference on High Performance Computing and Communications, Los Alamitos, CA, USA.

[7]. Gleeson, E. 2009. Computing industry set for a shocking change. Retrieved January 10, 2010 from: http://www.moneyweek.com/investment-advice/computing-industry-set-for-ashocking-change-43226.aspx

[8]. Meenakshi Thapliyal, Dr.Hardwari Lal Mandoria, Neha Garg, "Data Security Analysis in Cloud Environment: A Review, International Journal of Innovations & Advancement in Computer Science IJIACS ISSN 2347 – 8616 Volume 2, Issue 1 January 2014.

[9].T. Hsin-Yi, M. Siebenhaar, A. Miede, H. Yu-Lun, and R. Steinmetz, "Threat as a Service?: Virtualization's Impact on Cloud Security," IT Professional, vol. 14, pp. 32-37.

[10] Z. Xiao and Y. Xiao, "Security and Privacy in Cloud Computing" Communications Surveys & Tutorials, IEEE, vol. PP, pp. 1-17.

[11]. Q. Zhang, L. Cheng, and R. Boutaba, "Cloud computing: state-of-the-art and research challenges," Journal of Internet Services and Applications, vol. 1, pp. 7-18.

[12]. Django Armstrong, Karim Djemame, “Towards Quality of Service in the Cloud”, School of Computing, university of leads, United Kingdom.

[13]. Sanjeev Arora, Bo Brinkman,” A Randomized Online Algorithm for Bandwidth Utilization”,Princeton University.

[14]. V. Jacobson,”Congestion avoidance and control”, In Proceedings of A CM SIGCOMM, pages 314-329, 1988.

[15] Saurabh Kumar Garg and Rajkumar Buyya,” Green Cloud computing and Environmental Sustainability”, Cloud computing and Distributed Systems (CLOUDS) Laboratory Dept. of Computer Science and Software Engineering The University of Melbourne, Australia.