Video Streaming through Secured CDN based on Demand

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Abstract: The hybrid architecture of content distribution network (CDN) and peer to peer (P2P) provides online streaming media services. Simulation makes the study of design space of hybrid streaming systems more convenient and cost effective . This paper, explains the approach of a designed and discrete event simulator for hybrid CDN-P2P VoD systems. Here the simulator supports multiple switching strategies, different video coding methods and P2P piece selection algorithms. We have verified the simulator and conducted experiments to study the design space of hybrid streaming systems. The results show that adjusting CDN connection threshold would be a more efficient way to provide a smooth streaming than adjusting CDN streaming rate. The simulator will be a reference tool for researchers which would enable them to further look into the hybrid VoD systems.

Keywords: CDN connection, streaming, VoD, hybrid, P2P

I. INTRODUCTION

Nowadays video streaming becomes increasingly popular on the Internet. According to Cisco report, video will occupy 82% of all consumer Internet traffic by 2020. To endure the massive volume of video streaming, a lot of techniques and solutions such as Content Delivery Network (CDN) or Cloud and Peer-to-Peer (P2P) have been raised both in academics and industries. In addition, hybrid CDN-P2P systems are also very popular. In our previous work, we revealed that Kankan is a loosely-coupled hybrid CDN-P2P streaming system, which is a popular manner for hybrid streaming systems. Although there are many hybrid systems, such as Kankan and PPTV, the deployment of CDN servers and the capacity of P2P networks remain unknown to the public. Passive measurements like what we did previously need a reverse engineering work. So the simulation for the hybrid systems is a good choice. However existing simulators are not for hybrid systems, but only for pure CDN or P2P networks. Consequently, we are motivated to develop a simulator suitable for hybrid CDN-P2P systems so as to take a further look at these systems. Our attempt is the first time that a simulator for hybrid CDN-P2P streaming systems has been designed.

II. LITERATURE SURVEY

In the existing systems by using the specified cloud storage services in the system, the customers or end users able to access information stored in a cloud anytime and anywhere making use of or from any device. And here the user does not need to worry about or no need to care about large amount of capital investment during the deployment phase of the underlying hardware infrastructures systems. The cloud service provider (CSP) stores multiple copies of data i.e. replicas on different servers distributed geographically. Where a user can read unwanted data or the data which is not updated for a period of time. The general system known as domain name system (DNS) is considered to be one of the most famous application systems that is going to implement eventual consistency operation. Here the updates done to a name will not be able to see or visible immediately in the system, but the system to the clients working with the system are have make sure they going to see them eventually. The simulator takes content popularity into account, which is highly related to the streaming resources in hybrid systems. This project proposed an extendable P2P, CDN chunk selection algorithm module, which supports the popular algorithms and can easily be extended to upcoming algorithms. This project also proposed a designable switching module, which supports the popular strategies like buffer-based control, and easily be extended to other strategies. This project finally proposed an extendable video coding module, where the simulator supports CBR (Constant Bit Rate), and VBR (Variable Bit Rate), and can be extended to ABR (Adaptive Bit Rate) extension. We will be removing the freezing time by the linearized transmission of frame packets as per the needs of the consumer of the application. We also provide the security for the data packets while storing into the server by cutting the packets and encrypting it. We implement DES (Data encryption Standard) algorithm to perform data encryption of videos.

III. SYSTEM DESIGN

The design is based on discrete-event simulator to study the design space of hybrid CDN-P2P streaming system. The structure of the simulator is shown in Fig. 1. The simulator consists of seven parts including P2P, CDN module, switch module, video module, QoE (Quality of Experience), cost module and Statue record.

A. Module Description

Admin Module - The Admin as the authority of authenticating the video. Without authenticating the video will not be available to the other user. The Admin as the capability of managing the videos and managing the user . The Admin have the power to delete the video if he feels that video is not valid to the users.The videos which contain an illegal content those videos are usually deleted.

Even in the same manner Admin as the power to view and delete the user.
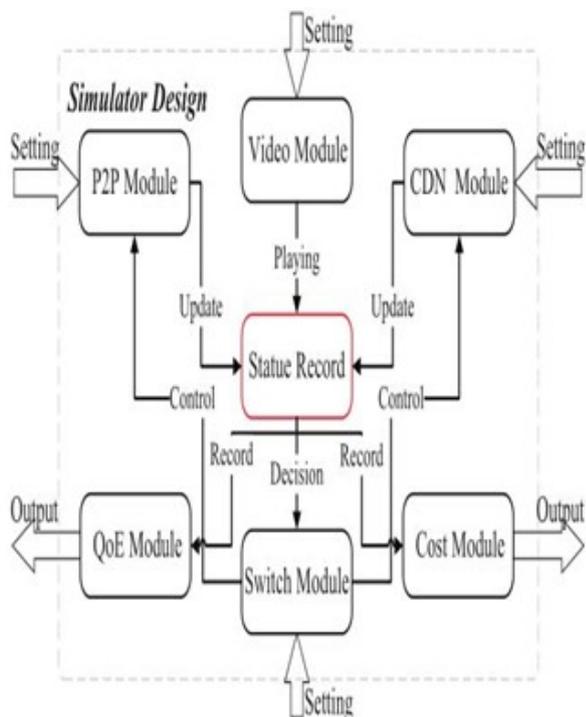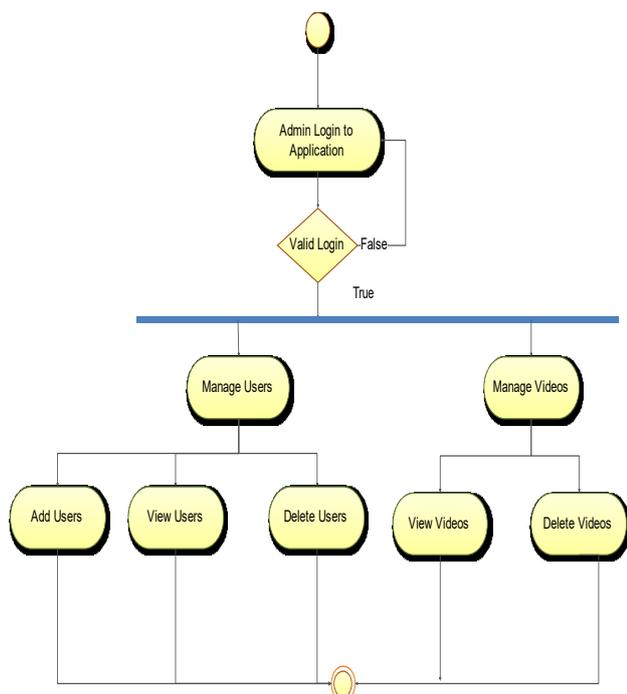

Fig 1.   Module Description

Fig 2.   Process Flow

User Module – User has to get registered first with the required details and whenever he wants to login he has to use the given ID to the respective user. If the user is the valid one he has the capability of doing the two jobs, to

identify add the videos. Also he can request the video the he wants through CDN.
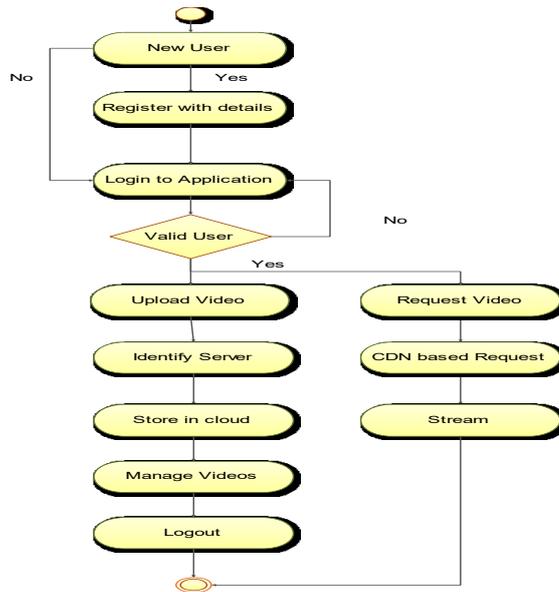

Fig 3.   Flowchart

IV.   CONCEPT

The paper is about streaming the video through secured CDN. The reason we are using the concept of CDN here because the servers should respond to all the user without fail. In the CDN it will create the replica of the server, the user should request the video which is of interested and should fetch the video, the video will be fetched on the basis of the bit rate, to bring the packets in linearized manner and to reduce the freezing time packets are transformed in the frames. The requested video by the user is directed to the admin ,the admin send the video in the encrypted way and by using the key which is given by the admin ,using the respective key the user can decrypted the video and see the video.

V.   ALGORITHM

In this paper to encrypt and decrypt the video we are using certain algorithm. To encrypt the video we are using AES algorithm, and to transfer the video we are using ECB (electro code book), because even the videos are buffered from the different channels all the packets should.

VI.   CONCLUSION

In this paper, we develop a discrete-event simulator for Loosely – coupled hybrid CDN - P2P streaming systems.

Several important aspects considered in the hybrid streaming area are taken into consideration in the design of the simulator, including P2P piece selection algorithms, switching strategies and video coding methods. The simulation results show that adjusting CDN connection threshold is a more efficient way to provide a smooth streaming than adjusting CDN streaming rate. The simulator proposed in the present study will serve as a

reference tool for researchers to take a further look at the hybrid streaming systems

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