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Real Time Video Streaming Platform Device for Mobile Networks

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ABSTRACT: Cloud multimedia services provide a capable, flexible, and scalable data processing method and offer an elucidation for the user demands of high quality and diversify multimedia. Generally speaking, accessing multimedia video services through networks is no longer a problem. The major video platforms, such as YouTube and Amazon, have good management styles and provide users to share multimedia videos easily with diversified services. No matter what the service is, users will always expect powerful, sound and stable functions. For multimedia videos, stability is of the greatest importance. As intelligent mobile phones and wireless networks become more and more popular, network services for users are no longer limited to the home. Multimedia information can be obtained easily using mobile devices; allowing users to enjoy everywhere network services.

KEYWORDS: Cloud Computing, Multimedia, Video Files.

I. INTRODUCTION

Video streaming is gaining popularity among mobile users. The latest mobile devices, such as smart phones and tablets, are equipped with multiple wireless network interfaces. How to efficiently and cost-effectively utilize multiple links to improve video streaming quality needs investigation. In order to maintain high video streaming quality while reducing the wireless service cost, in this paper, the optimal video streaming process with multiple links is formulated as a Markov Decision Process (MDP). The reward function is designed to consider the quality of service (QoS) requirements for video traffic, such as the startup latency, playback fluency, average playback quality, playback smoothness and wireless service cost. To solve the MDP in real-time, we propose an adaptive, best-action search algorithm to obtain a sub-optimal solution.

II. LITERATURE SURVEY

1) TITLE: Media Cloud: When Media Revolution Meets Rise of Cloud Computing.

AUTHORS: Mingfeng Tan Computer Engineering Department, San Jose State University San Jose, CA, U.S.

DESCRIPTION: Media cloud provides a cost-effective and powerful solution for the coming tide of the media consumption. Based on previous summary of the recent work on media cloud research, in this section, we first make some suggestions on how to build the media cloud, and then propose some potentially promising topics for future research.



2)TITLE: Multimedia cloud computing

Digital Object Identifier 10.1109/MSP.2011.940269

Date of publication: 19 April 2011

DESCRIPTION: This article introduces the principal concepts of multimedia cloud computing and presents a novel framework. We address multimedia cloud computing from multimedia-aware cloud (media cloud) and cloud-aware multimedia (cloud media) perspectives. First, we present a multimedia-aware cloud, which addresses how a cloud can perform distributed multimedia processing and storage and provide quality of service (QoS) provisioning for multimedia services. To achieve a high QoS for multimedia services, we propose a media-edge cloud (MEC) architecture., in which storage, central processing unit (CPU), and graphics processing unit (GPU) clusters are presented at the edge.

3)TITLE: Seamless Support of Multimedia Distributed Applications Through a Cloud

AUTHORS: Stefano Ferretti, Vittorio Ghini, Fabio Panzieri, Elisa Turrini

Department of Computer Science, University of Bologna

DESCRIPTION: We are planning to carry out a validation and a thorough experimental assessment of the performance of our cross-layer architecture as soon as its development will be completed. In addition, we would like to extend our study on this class of architectures to investigate the impact of dependability issues.

4) TITLE: Distributed Scheduling Scheme for Video Streaming over Multi-Channel Multi- Radio Multi-Hop Wireless Networks.

AUTHORS: Liang Zhou, Xinbing Wang, Wei Tu, Gabriel-MiroMuntean, and Benoit Geller

DESCRIPTION: In this paper, we have developed fully distributed scheduling schemes that jointly solve the channel-assignment, rate allocation, routing and fairness problems for video streaming over multi-channel multi-radio networks. Unlike conventional scheduling schemes focus on optimal system throughput or scheduling efficiency, our work aims at achieving minimal video distortion and certain fairness by jointly considering media-aware distribution and network resource allocation.

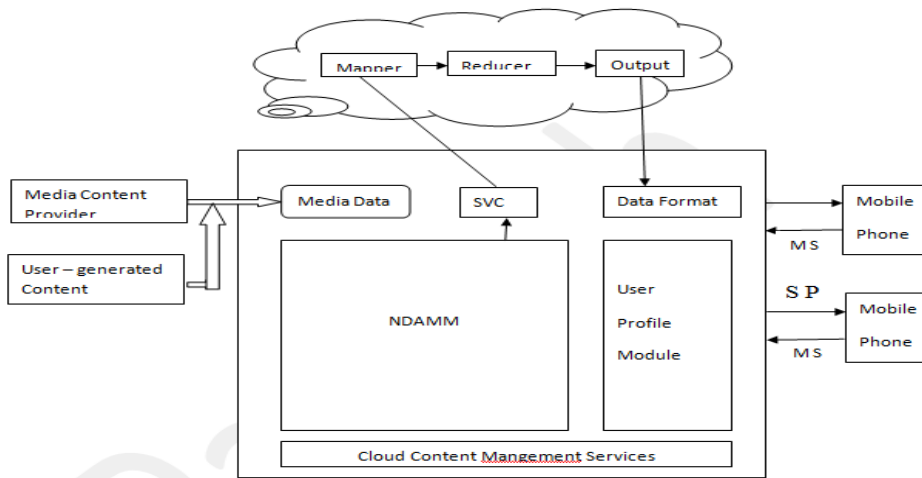
III. PROPOSED METHODOLOGY AND DISCUSSION

Existing System:

In the previous service, the mobile device side exchanges information with the cloud environment, so as to determine optimum multimedia video. Scholars have done numerous researches toward conventional platform (CDN) to store different movie formats in a multimedia server, to choose the right video stream according to the current network situation or the hardware calculation capabilities. To solve this problem, many researchers have attempted dynamic encoding to transfer media content, but still cannot offer the best video quality.

Proposed System:

For the device according to the parameters, and then the SVC Transcoding Controller (STC) handover the transcoding work via map-reduce to the cloud, in order to increase the transcoding rate. The proposed system provided an efficient interactive streaming service for diversified mobile devices and dynamic network environments. When a mobile device requests a multimedia streaming service, it transmits its hardware and network environment parameters to the profile agent in the cloud environment, which records the mobile device codes and determines the required parameters. Then transmits them to the Network and Device-Aware Multi-layer Management (NDAMM). The NDAMM determines the most suitable SVC code. The multimedia video file is transmitted to the mobile device through the service.



USER PROFILE MODULE:

The profile agent is used to receive the mobile hardware environment parameters and create a user profile. The mobile device transmits its hardware specifications in XML-schema format to the profile agent in the cloud server. The XML-schema is metadata, which is mainly semantic and assists in describing the data format of the file.

NETWORK AND DEVICE AWARE MULTI-LAYER MANAGEMENT(NDAMM):

The NDAMM aims to determine the interactive communication frequency and the SVC multimedia file coding parameters according to the parameters of the mobile device. It hands these over to the STC for transcoding control, so as to reduce the communication bandwidth requirements and meet the mobile device user’s demand for multimedia streaming.

DYNAMITIC NETWORK ESTIMATION MODULE (DNEM): The DNEM is mainly based on the measurement-based prediction concept; however, it further develops the Exponentially Weighted Moving Average (EWMA). The EWMA uses the weights of the historical data and the current observed value to calculate gentle and flexible network bandwidth data for the dynamic adjustment of weights.

NETWORK AND DEVICE-AWARE BAYESIAN PREDICTION MODULE (NDBPM):

The SVC hierarchical structure provides scalability of the temporal, spatial and quality dimensions. It adjusts along with the FPS, resolution and video variations of a streaming bitrate: however, the question remains of how to choose an appropriate video format according to the available resources of various devices. Hereby, in order to conform to the real-time requirements of mobile multimedia, this study adopted Bayesian the oryto infer whether the video features conformed to the decoding action

IV. RESULTS

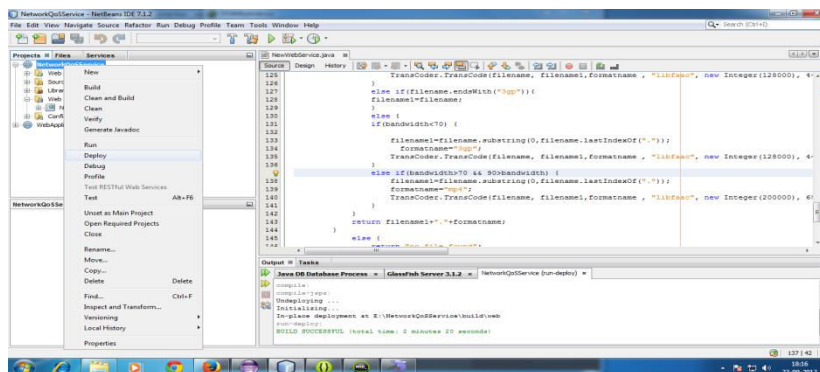


Fig. 2: CODE IN NETBEANS

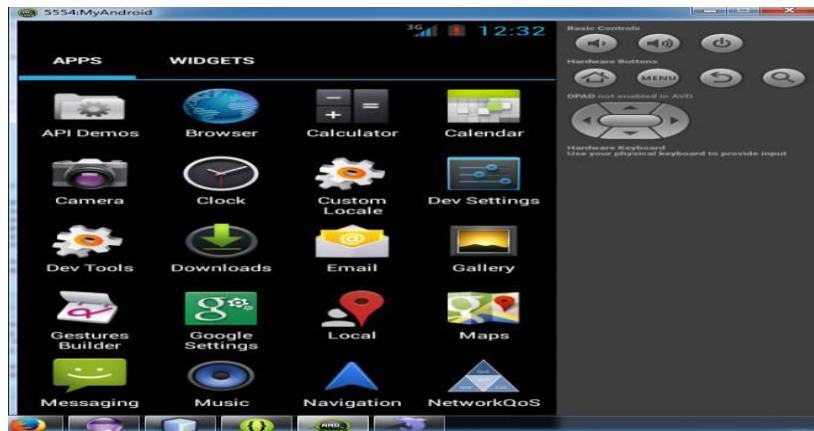


Fig. 4:VIRTUAL ANDROID USING ANDROID EMULATOR



Fig. 5: SIGN IN VIRTUAL ANDROID

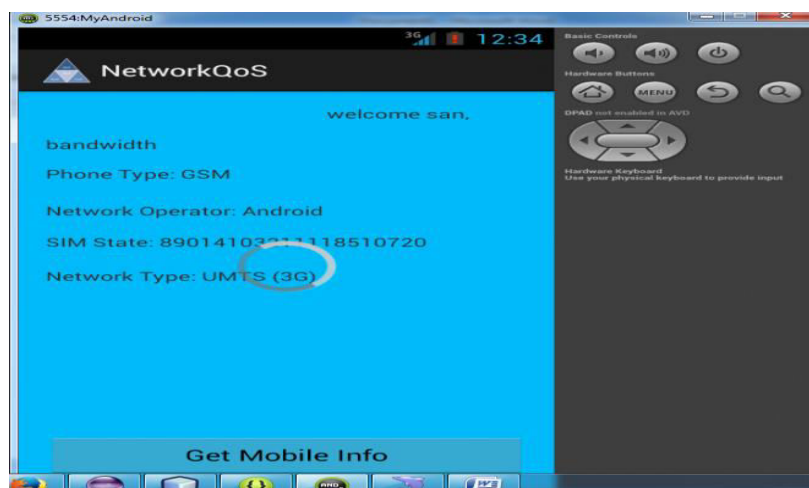


Fig. 6:GET INFORMATION ABOUT VIRTUAL ANDROID

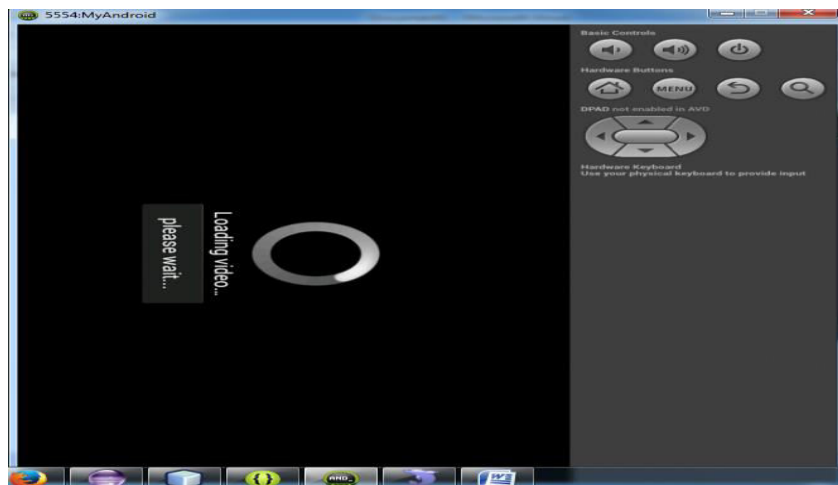


Fig. 7 : AFTER UPLOADING THE VIDEO

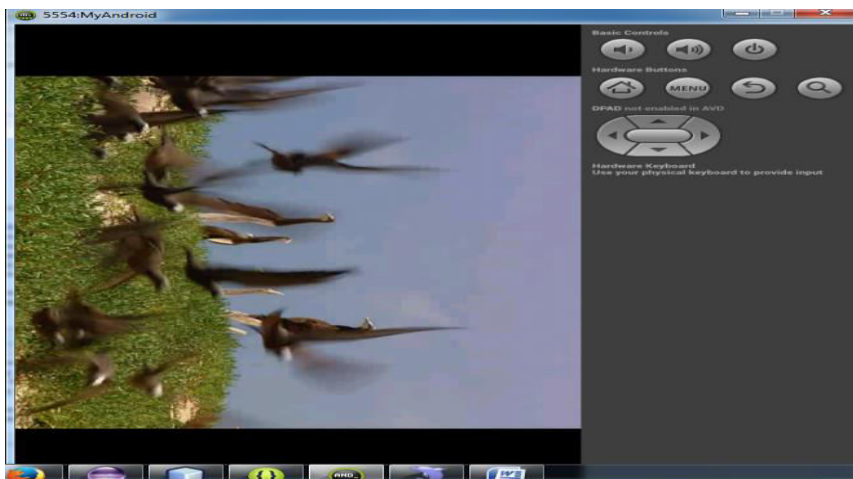


Fig. 8: MINIMISED VERSION OF VIDEO IS PLAYING

V. CONCLUSION

For mobile multimedia streaming services, how to provide appropriate multimedia files according to the network and hardware devices is an interesting subject. In this study, a set of adaptive networks and a device aware QoS approach for interactive mobile streaming was proposed. The DNEM and DBPM were used for the prediction of network and hardware features, and the communication frequency and SVC multimedia streaming files most suitable for the device environment were determined according to these two modules. In the experiment, the overall prototype architecture was realized and an experimental analysis was carried out. this study presented a network and device-aware Quality of Service (QoS) approach that provides multimedia data suitable for a terminal unit environment via interactive mobile streaming services, further considering the overall network environment and adjusting the interactive transmission frequency and the dynamic multimedia transcoding, to avoid the waste of bandwidth and terminal power. Finally, this study realized a prototype of this architecture to validate the feasibility of the proposed method.

VI. FUTURE WORK

In this work, we just consider a single flow scenario and ignore the interference from the other flows as well as the competitive bidding for spectrum usage from the other flows. In a CRN with multiflows, the CR source nodes need to develop sophisticated bidding strategies considering the competition from the peer flows, and the SSP should jointly consider the cross-layer factors and the bidding values to determine the sharing of the harvested spectrum.



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