

Cooperative Content Downloading Framework over Cellular Network

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Abstract- *There are a number of applications which provide a single user downloading scheme but there is no provision for cooperative downloading i.e. multiple user can download the same file provided each group member will download a separate segment of file. The software likes Torrent; YouTube facilitates only a single end user to download a file. However because of limited bandwidth access the data download volume by an individual is quite less and take much more time to download a high resolution video. Nowadays, there are unlimited 2G/3G plans provided by internet service provider the most of data plans are waste due to bandwidth limitations. The cooperative content downloading framework will allow the requested members in the group to download some portion of the file separately. This will provide the ability to download the file cooperatively in less time and cost. This project proposed a hybrid cooperative video downloading over the hybrid networks, which is composed of cellular network and wired network. The proposed cooperative video downloading has focused on the issues belonging to the application layer. The technique can be used by many video hosting website and end user which are widely using the cellular bandwidth for downloading purpose. The system had overcome the bandwidth issues for downloading large file in considering multiple obstacles. Same approach can be used for the existing LAN network considering the server as a group Admin and all the remaining desktops as group members. In further research will focus on the issues of network layer for cooperative downloading of file.*

General Term: Cooperative Downloading

Keywords- Segmentation, Group formation, Adhoc network, Sequencing.

I. INTRODUCTION

Now a days the internet service provider gives the unlimited data pack, maybe it is for wired or wireless devices like mobile or laptops and desktop. Most data planes are wasted due to the limited bandwidth offered by an internet service provider. An individual can't download a huge file because of his limited bandwidth. So in order to make efficient use of available resource the proposed system states a method called Cooperative downloading. In this the multiple members

can take part in downloading single file. Here each member is responsible for downloading some portion of desired file independently, with using his own bandwidth and hardware device.

The proposed system can be used in VANET, LAN or mobile adhoc network for any kind of downloading. We focus on how to form a chain topology before coverage to keep it stable. Wireless cooperative network architecture, where a group of users use dedicated short range communication to save the costs of a cellular download. To maximize the efficiency of the communication system, an optimization of parameters such as download time, monetary cost can be implemented. Following these approach different portions of data shall be assigned for download to the involved users, which will then cooperatively exchange the contents on the adhoc network which will have no concern with internet.

The method of task assignment to the user terminals has a direct influence on the payoff of the single users, raising fairness issues in real implementation scenarios. While one end user can take out best of available bandwidth and data pack plan provided by internet service provider.

The flow of cooperative content downloading framework is in the following stages.

1. Scanning for members.
2. Requesting the members in group.
3. File segmentation and sequencing.
4. Allocating task.
5. Data collection by using adhoc network.

II. RELATED WORK

In this section we survey research issue in the cooperative content downloading framework [1]. Most of researches have state cooperative video streaming technique, which facilitate watching a video cooperatively [2]. But our proposed system will explain the segmentation and sequencing technique for desire approached work. Most of the work of downloading is done by considering single user but we will take multiple group members to complete the task [3]. Since

the bandwidth of the 3G/3.5G network over moving vehicular networks is unstable and insufficient, the video quality of the requested video stream may not be good enough. Even using 4G network, the bandwidth still may not be enough for the following concerns [4].

First, other applications may utilize the 4G network simultaneously. Second, the moving behavior of one vehicle e.g. moving with high speed or around the coverage boundary of one base station makes the decaying of 4G bandwidth. In order to increase the video quality during the travelling path, one vehicle would ask other vehicles belonging to the same fleet to download video data using their redundant 3G/3.5G bandwidth.

A. Existing System

The existing software for downloading facilitates only a single user for downloading. Means a single user can download a single file, we can't cooperatively download a single file or can't share our bandwidth for downloading a file or video. The existing technology provides the multiple storage facilities but doesn't support multiple user downloading.

III. SYSTEM MODEL

The entire system work is describe stage wise, as shown in figure 1 each steps perform respectively.

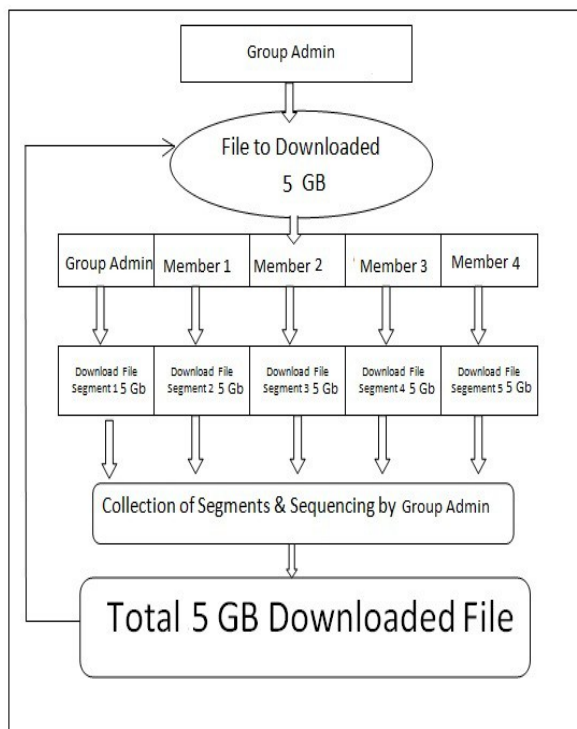


Fig.1 System Architecture

A. Scanning for Members

The group admin or the user who wants to download a file will scan the members with in his proximity who can help to the file. Once he find them through Wi-Fi or Bluetooth, then he will send request to be member of the group to download certain file. As per the interest the member will accept or deny the request for helping the admin. If request is being accepted by him he will be the group member and share his bandwidth to download some portion of file.

B. Requesting the Members

As per the interest the member will accept or deny the request for helping the admin. If request is being accepted by him he will be the group member and share his bandwidth to download some portion of file. This specifically selects those members which are very closer to Group Admin and has good bandwidth. After getting the acknowledgement from the member the admin will decide how much segments of file should be done.

C. File segmentation and sequencing

In order to download any file it is break into number of segments and file is ranking particular order, so after receiving it can be arranged properly. Once the acknowledgement has been received the Admin will do the segmentation and allocate the task for downloading. The respective cluster member will download the allocated segment with his own available bandwidth. Here given file as shown in figure 2 first break into five segments and further sequencing is done in numerical format like 1/5,2/5, 3/5,4/5 5/5.

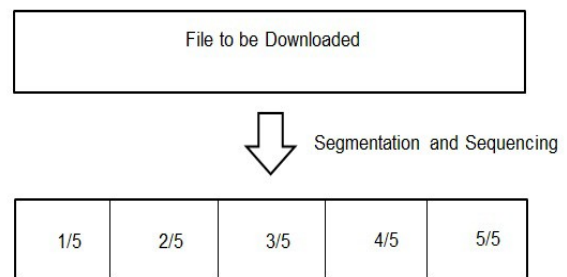


Fig.2 Segmentation and Sequencing

D. Allocating Task

Once the file is broke into number of segments, according to the group member availability and the segments

which are done the task of downloading is allocated to each member of group. Here each member is responsible for downloading the segment which has been allocated.

E. Data Collection by using Adhoc network

After downloading the group admin will forward the downloaded data to the Admin through the adhoc network without using the cellular network. Here adhoc network can be of Bluetooth or Wi-Fi depending upon the service available to devices. Then Admin will do the collection of segment form each member and put it in sequence and the file will be ready to use or if the file is video format it is ready to watch.

IV. CONCLUSION

This paper proposed a hybrid cooperative video downloading over the hybrid networks, which is composed of cellular network and wired network. The proposed cooperative video Downloading has focused on the issues belonging to the application layer. The technique can be used by many video hosting website and end user which are widely using the cellular bandwidth for downloading purpose. The system had overcome the bandwidth issues for downloading large file in considering multiple obstacles. Same approach can be used for the existing LAN network considering the server as a group Admin and all the remaining desktops as group members. In further research will focus on the issues of network layer for cooperative downloading of file.

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