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Cooperative Content Downloading Framework

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Abstract: *The recent development in wireless communication technology has made it possible to use smartphones, laptops, and tabs massively for downloading purpose. However due to limited bandwidth access the data download volume of individual is quite less and take much more time to download a high resolution video. 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. The proposed system will also show the actual process how the bandwidth can be shared among the friends and group member. The entire system will provide the efficient use of bandwidth in different environment.*

Keywords: *Segmentation, Cluster formation, Adhoc network, Sequencing.*

I. INTRODUCTION

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. Through cooperative downloading framework this limitation will be overcome. Nowadays, there are unlimited 2G/3G plans provided by internet service provider the most of data plans are waste due to bandwidth limitations. These issues will also be solved by our cooperative content downloading framework. The proposed system can be used in VANET, LAN or mobile adhoc network for any kind of downloading. Compared with the indoor wireless local area network (WLAN) scenarios, efficient communications in the Drive-thru internet is a much more difficult task and affect the downloading. Before entering into the cellular coverage, the tagged member of group coordinates to form a cluster. Several typical clustering approaches have been investigated where the basic idea about how to find the partners is similar. We focus on how to form a chain topology before coverage to keep it stable. Wireless cooperative network architecture, where a group of users exploits short-range wireless links to share the costs of a cellular download. To maximize the efficiency of the communication system, an optimization of parameters such as download time, monetary cost, and energy consumption 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 short-range link. However, the policy 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. Focusing on the energy savings introduced by the wireless cooperative network. While one end user can't take out best of available bandwidth and data pack plan provided by internet service provider.

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

1. Requesting the members.
2. File segmentation and sequencing.
3. Task Allocation.

4. Data collection through 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.

III. SYSTEM MODEL

The entire system work is describe stage wise, as shown in figure 1 each step is perform one after another .

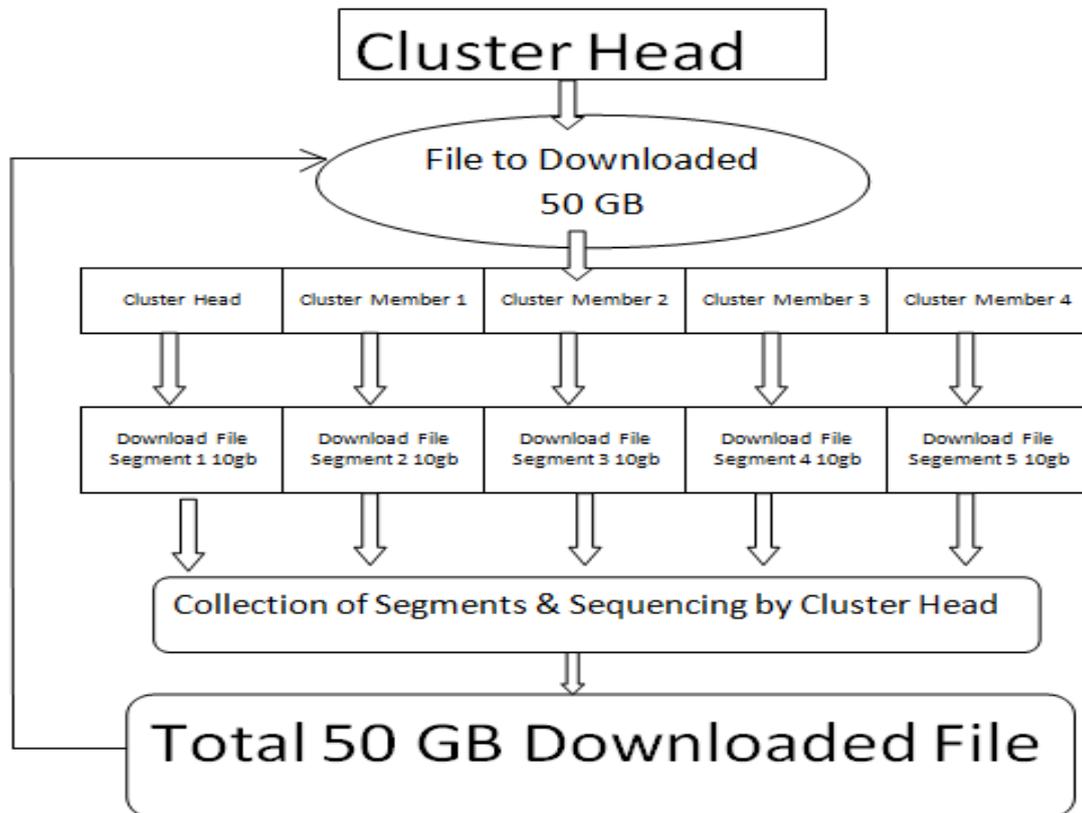


Fig. 1 System Architecture

Requesting the Member

Here the cluster head who want to download the file may be of video, mp3, pdf type etc. Cluster head request the member in surrounding areas or group if the member agrees to support the cluster head they accept the request and acknowledge the same. The greedy approach algorithm technique is used for finding the members around us. This specifically selects those members which are very closer to cluster head and has good bandwidth. After getting the acknowledgement from the cluster members the cluster head will decide how much segments of file should be done.

Segmentation and Sequencing

In order to download any file it is break into number of segments and file is rank in particular order, so after receiving it can be arranged properly. Once the acknowledgement has been received the cluster head 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 broke into five segments and further sequencing is done in numerical format like 1/5, 2/5, 3/5, 4/5 & 5/5.

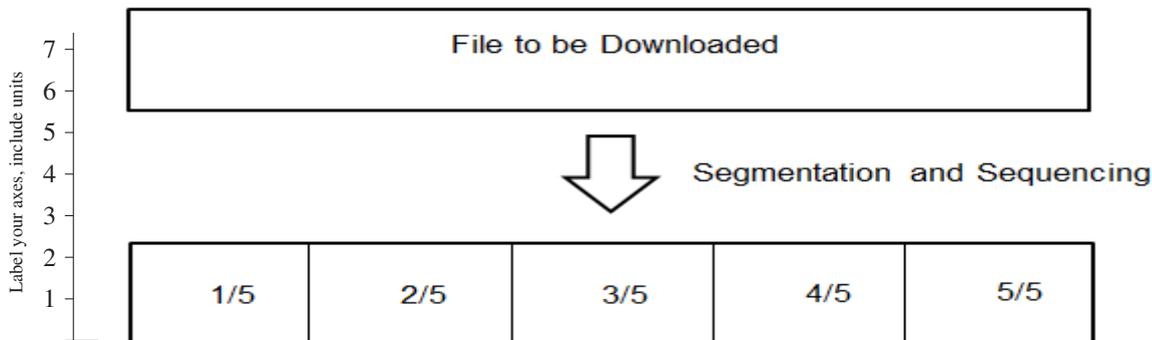


Fig. 2 Segmentation and Sequencing

Task Allocation

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.

Data Collection Through Adhoc Network

After downloading the cluster member will forward the downloaded data to the cluster head through the adhoc network without using the cellular network. Then cluster head 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 cluster-based cooperative video downloading over the hybrid networks, which is composed of 3G/3.5G cellular network and ad-hoc 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 cluster head and all the remaining desktops as cluster members. In further research will focus on the issues of network layer for cooperative downloading of file.

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