Contributing Secured Session with Less Traffic Using Device-To-Device Communication for Social Networks

G. Renuga
Department of Computer Science and Engineering
A. V. C College of Engineering

H. Prabavathi
Department of Computer Science and Engineering
V. C College of Engineering

Abstract - **Managing sessions for individual users in the current networking environment is a very big task. Networks and sub-networks are playing major role in current evolving networking world. Consider five device using internet via the sixth devices in a network and they all are using same application with unique user id. It should not be mismatched with the data and user id in that network as there is confusion between devices and IP from the Server. And also it will occur unwanted traffic due to accessing same data by multiple users repeatedly. It is proposed a better method to manage the traffic and user's session security.**

I. INTRODUCTION

Mobile communication systems can be implemented by either cellular networks or ad hoc networks. In a cellular network, direct communications between mobile devices are not permitted. Traffic should be routed via a core network even if a source and a destination are very close to each other. Comparably, in an ad hoc network, devices can communicate with each other directly without a centralized controller [1], which is referred to as device-to-device (D2D) communications. Enabling additional D2D communications in cellular networks has become an interesting research topic the efficiency of a cellular system can be improved by exploiting high channel quality of short-range D2D links. The other advantages of introducing D2D communications to a cellular system include prolonged terminal battery life due to reduced transmission power [2], more efficient resource utilization because of direct routing of D2D traffic [2], improved content distribution performance by using inter-recipient transmissions, etc. Wireless multicast transmission, as an efficient way to disseminate the same content simultaneously to multiple recipients [3], is well suited for supporting the applications such as mobile TV and data distribution in cellular systems. However, the recipients of wireless multicast may experience very different channel conditions, making it hard for a multicast sender [4], i.e., a base station (BS), to transmit data at a rate suitable for all recipients. In most cases, a multicast rate is selected according to the worst channel condition to assure successful reception at every recipient. As a result, the achievable multicast throughput may degrade significantly [4], especially when most but not all recipients are in good channel conditions and capable for high rate transmission, as one or very fewer poor recipients may become a bottleneck of the multicast throughput.

Device-to-device (D2D) communication as an underlying cellular network empowers user-driven rich multimedia applications and also has proven to be network efficient offloading traffic. However, D2D transmitters may cause significant amount of interference to the primary cellular network when radio resources are shared between them. During the downlink (DL) phase [5], primary cell UE (user equipment) may suffer from interference by the D2D transmitter. On the other hand, the immobile is the victim of interference by the D2D transmitter during the uplink (UL) phase when radio resources are allocated randomly. Device-to-Device (D2D) communication is considered to be a promising resource reuse technology for local services [5], to meet the system demands of higher data rates and spectrum efficiency in future networks. In order to limit severe interference between cellular links and local D2D links [6], previous studies mainly focus on one or two functional blocks, such as power control and resource allocation [7], which seems inadequate for further exploiting D2D's potential. The recent few years have witnessed a tremendous growth in video content generation and distribution. This can be noticed in the large number of sites that make it easy for users to upload and share videos. Some of these sites like YouTube are among the most trafficked sites on the web, in addition to social networking sites such as Facebook which allow users to share videos online with their friends. Some of the technological factors that lead to such increase are the wide spread of wireline broadband Internet access, such as cable and DSL, with which it becomes much faster to download/upload high resolution videos. In addition, the ubiquitous availability of portable devices with cameras, such as smart phones [6], PDAs and Internet Tablets, makes it now very convenient for regular users to create videos at a reasonable quality instantaneously. This has a strong impact on video content, as many of the videos we see now are not created by professional media studios, but could actually be created by anyone.

Although mobile devices play an important role in creating these personal videos, till now they have not played a major role in uploading, downloading, or generally sharing these videos [2], due to the limited capacity and speed of current wireless connectivity. As the demand on downloading and uploading videos using mobile devices increases, this could cause an overload on the limited capacities of the current cellular data networks and even Wi-Fi hotspots [2], negatively affecting their performance and the experience of users using these networks. Our observation is that many of the video sharing scenarios potentially can be carried out locally without increasing the load on the network infrastructure. For example, sharing of the personal videos created between families and friends at certain events happens directly on the spot; a group of people simultaneously watch videos [2], whether they are friends downloading and watching the same video or at a public place where news and announcements are being broadcasted. In order to effectively achieve the D2D communication, we mainly address from two aspects [4], first is to look for the dedicated resources and bandwidth for D2D communication, the second aspect is D2D user resource reuse of cellular users. Due to restrictions of communication scenarios, most application scenarios of D2D communication systems are not rich resource scenes, therefore, improve resource reuse efficiency become the focal point of communication quality and the end result. Resource reuse need to solve two problems: First, how to determine D2D access, namely D2D user application access mode selection, the second is the next scene in the multiplex interference coordination, reduce system interference. Existing system uses the algorithm names Proposed Traffic Offloading Algorithm. In the existing model the network users are categorized into two types one is frequent user and normal user. The frequent user is the one who is continuously using the network. These frequent users are cause for the more traffic in the network. And they cannot be avoided to maintain usability. The second type is the normal user, these users and mostly seems to be in offline. When these users tries to login to the social network the data has to be delivered to his device. To reduce traffic the existing propose the Traffic Offloading Algorithm, this algorithm runs in every social network app and categorize the app and device to any one type of user [6]. Then this algorithm will use the frequent user's node as centric node [7]. So all the data for the social network usage will load to those nodes and from those nodes the data transmitted to offline nodes.

This project proposes the better method and algorithm to overcome the problems faced in the existing system. To provide the security and to reduce traffic the existing system is just modified with the proposed method Service Based Data Delivery Algorithm (SBDDA), in this proposed method instead of categorizing users based on the usability they are categorized based on the services. The social network Apps are designed to load data as a service file not as the data. It is lightweight compared to the normally transmission. The data is packed as the service file and transmitted over the network to the client. This algorithm also cares about security of data over network by encoding it and to reduce the file size it compress the file size before sending to client.

II. PROPOSED DESIGN

This project proposes the better method and algorithm to overcome the problems faced in the existing system. To provide the security and to reduce traffic the existing system is just modified with the proposed method ***Service Based Data Delivery Algorithm (SBDDA),*** in this proposed method instead of categorizing users based on the usability they are categorized based on the services. The social network Apps are designed to load data as a service file not as the data. It is lightweight compared to the normally transmission. The data is packed as the service file and transmitted over the network to the client. This algorithm also cares about security of data over network by encoding it and to reduce the file size it compress the file size before sending to client.

Data Server In Base Station

The data server in base station has the responsibility to accept client request and serve data. It authenticates the client nodes for communication and holds its information like IP, MAC, service ID and node movement pattern. It uses the Service Based Data Delivery Algorithm (SBDDA) to handle network nodes by getting node information from network server. To connect to a server, the client must be able to communicate with it over the network. Computers connected to the Internet typically communicate using TCP/IP (Transmission Control Protocol and the Internet Protocol). TCP/IP allows different types of computers to communicate at a low level; it is up to applications, however, to determine how client and server software talk to each other.

Network Management And Controlling

Network manager is responsible for forming a network. It allots IP and resource for nodes under network and collects the nodes information. It also controls and monitors the nodes communications by allotting bandwidth for every data transmissions. Nodes every movement is traces by this network manager for travel history which can be used for analysis. Network Manager continuously monitors the response time of multiple devices based on the severity. It updates the system details, such as System Name, System Description, and System Location in a range of devices. The status of the ports can be either listening or not listening. You can associate the ports with the known services, which enables you to know the unknown/unwanted services running in the system.

Social Network Client Node Communication

The client node in our simulation network enters into the network as a network node and sends the connection request to the network manager. Then randomly it acts as the social network client and asks for service data to the data server. Then it receives that data via D2D communication from that data server with the allotted bandwidth. A client is the machine that is requesting the service. To offer a service, a server must get a transport address for a particular service. This is a well-defined location that will serve to identify the service. The server associates the service with this address before clients can communicate with it.

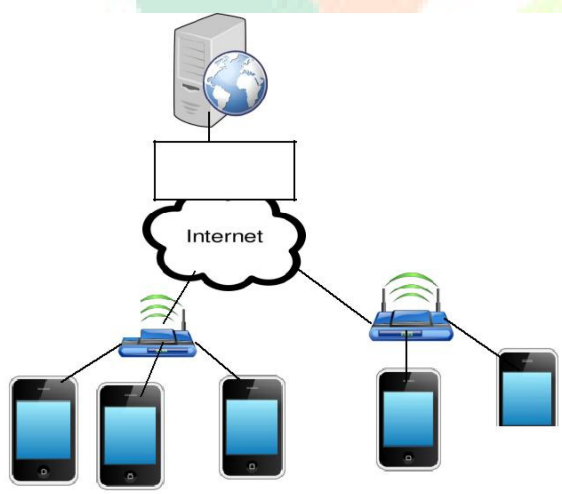
Session Handling And Controlling Traffic

The process runs under our algorithm which controls the server and client nodes session under communication. It is responsible for security and connection individuality. Session manager identifies the nodes service request and categorizes the nodes for social network communications. The data to be transmitted to the client from server will be transmitted using D2D communication only through the social network devices. The Algorithm proposed reduces the unwanted traffic in the network and provided network and data security. It also performs data binding operation to reduce the data weight while on communication.

Traffic Analysing and Monitoring

This module runs throughout entire simulation which used to records the rate of data transmission and traffic between the nodes communications. This traffic rate is plotted as graph to find the variation in the rate of data transmission and traffic level in the network. Traffic monitoring and analysis is essential in order to more effectively troubleshoot and resolve issues when they occur, so as to not bring network services to a stand still for extended periods of time. If a network were to be down even for a small period of time productivity within a company would decline, and in the case of public service departments the ability to provide essential services would be compromised.

Architecture Diagram



RESULT AND DISCUSSION

The performance of the routing and data SBDDA algorithm in D2D network depends on the efficiency of various challenges from several dimensions such as human mobility, community structure, user selfishness, context information, etc. In light of the work on D2D network focusing on its various aspects, there are still several questions and problems left without any proper answer.

Data Deliver: However, incremental community detection techniques could find a sequence of communities with temporal similarity and hence, is suitable for MSNs with the community structures that are more stable over time. As such, an incremental community mining approach which considers both current and historic information into the objective of mining processes. Nevertheless, new algorithms should be developed to detect the evolution of communities in highly dynamic MSNs. One potential solution is the identification of critical events and transitions for the evolving social communities.

Traffic control: Effectiveness is defined as, for a protected station, in the application layer, the ratio between throughput of the uplink traffic in protected mode and the throughput of the uplink traffic in normal mode. Protected mode means that AP allocates medium resource to this uplink traffic by different mechanisms, while normal mode means that AP works normally without running any mechanism it is propose.

CONCLUSION

Mobile social networks (MSNs) are modern types of social media, which consolidate the ability of a present connection for mobile devices to share user-centric data objects among interested users. The close connection between ubiquitous mobile devices and the users' social relationships attracted researchers to explore the potential of introducing social properties into network design. In the light of the recent investigations on MSNs, in this project, the major social properties of MSNs were presented and an overall view of human mobility models and community detection algorithms was presented. Then, routing and data dissemination protocols in MSNs with respect to context-awareness, user selfishness and incentive-awareness were reviewed. Finally, some major open research issues were explored and future research directions were outlined. We hope that this effort will instigate future research on this critical topic encouraging application and system designers to develop valuable and appealing routing and data dissemination solutions.

FUTURE ENHANCEMENT

How ever the current SBDDA provide the better routing in a mobile social network this can be still improved for the future increasing network. The development can be made on the factors of node speed, node pause time, network size, number of traffic sources and routing protocol. And the performance is calculated via average throughput, average routing overhead and power consumption. So this proposed model can adopt lager network along with the faster node updating algorithms like DSDV. This can be also used to avoid the node pause time that is caused because of the routing loops. As this model can avoid traffic sources by performing routing in community network by eliminating other unwanted nodes the effective use of the bandwidth is achieved. Thus there is less traffic in the implemented model the throughput rate is higher and routing overhead in improved for better network.

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