F-Share for Hand Held Devices Using Wi-Fi Bluetooth Network

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ABSTRACT

The use of smart phones as increased drastically from last few years due to the facilities provided for user like sharing images, files, videos, and chatting application. Along with its use performance and efficiency has increased, but for using the facilities provided by smart-phones data packet connection is needed which is quite costly. Existing Peer-to-peer system was used for data transmission but there were some limitations related to that system as like whenever data was transmitted through network like Wi-Fi or Bluetooth and if connections were not possible due to some reasons like users displacement of user from one place to another the message was not sent until the user manually resends it again. Smart-phone provides us with the facility of sending SMS, Whatsapp, Hike but they are not freely available as some cost needs to be given. So to overcome all this limitations the proposed application called "Seamless File Sharing" is introduced which can share data, files, images without using any internet facility. In this application data transmission takes place through two ways first through Wi-Fi network and through takes place through Bluetooth Network. Whenever there is any connection problem then the network automatically switches to Bluetooth network.

Keywords: File Sharing, Ad-hoc Network, Android, Energy efficiency and Sharing at low cost.

I. INTRODUCTION

The use of smart-phones[2][3] has increased drastically form last few years as it has reached up to approximately 50% till 2011.Many features has been added with respect to the upgrade in the version of smartphones. Smartphones has capacity of sharing videos, pictures, file and other features. Now-a-days smart-phones [2][3] have enriched with the facilities like downloading songs sending it to another smart phones and has facility like user can watch movies, video etc. on our home television system. Applications like Whatsapp, Hike, Messenger and other are in trend today, but the main drawback is that for running this application as it require that your phone needs to have data packet connection running on it. Earlier peer-to-peer[4][8] systems were used for sending files from one smart phone to another without using internet facility but its drawback was that this system undergoing frequent disconnection due to user displacement from one place to another. So to overcome this limitation application is proposed known as "Seamless File Sharing", merits of this application are that it does not undergoes frequent disconnection and if file is unable to send file through one network it will switch to another network.

1) Important Features of Seamless File Sharing:
    1. Adhoc network is created for sharing files through Wi-Fi/Bluetooth network.
    2. Communication is faster.
    3. File is send seamlessly without any interruption.
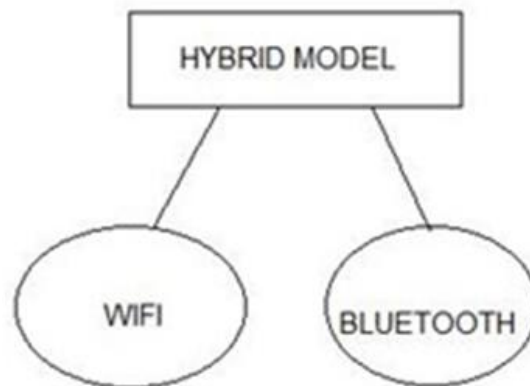
From the above figure we can say that hybrid model is designed which is the combination of both i.e. file can be send through Wi-Fi or Bluetooth network.

This application can be used in college premises where data and file sharing can be done without any use of 3G connection so file sharing can be an easy job. So an Wireless Adhoc network [1][8] is created for file transfer. For chatting purpose or for sending SMS Global System for Mobile Communication(GSM) or Code Division Multiple Access Network(CDMA) are used but for this application user only needs to install this application in his smart- phone and use the facility of chatting ,file sharing without using any data packet connection and at free of cost. Smart-phones [2][3] having this application has advantages like :

1. Network connection is not billed to the user.
2. Low economic cost.
3. Faster packet data connection.

II. EXISTING SYSTEM

SDNAN (Software-Defined Networking in Adhoc Networks of Smartphones) [2] is this application Software Defined Networking (SDN) is used to meet the changing demand of the operating environment. The theory of SDN is separated into 3 distinct components.

1. Communication layer.
2. Network Operating System (NOS).
3. Control Program.

Communication layer consists of physical network devices like routers and switches; NOS manages network resources and the control program controls the network through NOS. Adding SDN to Adhoc network improves its Performance .It consists of 3 layers:

1. Ad-hoc networking layer based on AODV.
2. Network Operating System layer which maintains the global map of network which manages the sub network for each application.

Development of a cooperative application for sending SMS On Wi-Fi mobile phones [4] this application provides peer Communication on Ad-hoc network but the main constraints is the radio coverage which can be improved by using relay protocols .In this paper WLAN is used as it is cheap as compared to mobile phones or PDAs. MANET (Mobile Ad-hoc Network) mobile devices get connected to any type of infrastructure .The algorithm used for routing are Single-hop, multi-hop. In this type of terminal network used there are 2 reasons taken into consideration i.e.

1. Device battery dependence.
2. Packet priority.

The main objective of this application was to send messages for small group of people over small area.

Mobile Messaging using Wi-Fi Ad-hoc Network [8] earlier uploading and sharing of file contents was done through Peer-to-peer systems as one system was connected to another system .As peer-to-peer system offers advantage over the traditional client-server networking models. Where data can be sent through wireless lines and expensive data packets [8].Wi-Fi Ad-hoc network is created for sharing information between the peers .But the limitations over this system was that if one wants to share any file and if any disconnection occurs in between then retransmission of data was not done automatically.

1) Limitations of Existing Systems:
    1. Existing methods are based on traditional mobile ad-hoc network (MANET) routing protocols which delivers worst performance for content sharing.
    2. Later some method introduced with more efficiency but resulted into more power consumption.

III. PROPOSED WORK

Seamless File Sharing (SFS) [1] consist of two managers:

1. Seamless Service Manager(SSM)
2. File Manager(FM)

SFS is done through both the above mentioned managers whenever file needs to be share it is done through Seamless Service Manager (SSM) [1] and file sent and receive is manage through File Manager(FM)[1].
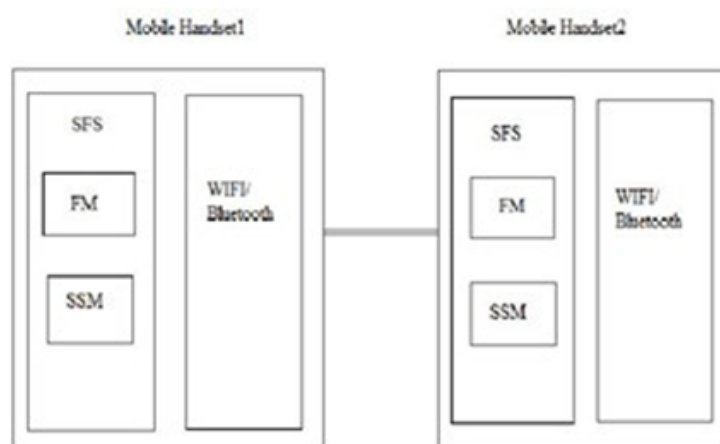

Fig -2: Communication between 2 devices

As shown in above figure communication between 2 devices takes place through SSM and FM. SSM sender communicates with SSM and FM of receiver. Whenever file needs to be share between two devices there are 2 options to send a file first through Wi-Fi network and if it is unable to send through it, it switches to Bluetooth network. When data transfer takes place through Wi-Fi network it is done through User Datagram Packet (UDP)[1] and if data sharing takes place through Bluetooth the it takes place through MAC[1] address.

3.1   Seamless File Manager (SSM)

Seamless File Manager (SSM) [1] maintains and updates name of device after every few seconds. SSM decides through which network data needs to be sent and if it is unable to send through one network it transfer file through other network.

3.2   File Manager (FM)

File Manager (FM) [1] decides which file needs to be sent or received. The file which needs to be sent is first needs to be divided in small blocks and the it is send to the receiver .After receiving file from sender FM stores the offset to check whether the other blocks and the combine other blocks to make entire file.

The Proposed Architecture consist of Network Discovery Manager, Communication Manager, File System Reader Writer, Central Sever and MySql Database .The GUI based Jsp Servlet application which will work as Central Sever and database as Mysql .With the use of that Server it will give the response back to client as android mobile handset. The use of that Server we can track which clients are online in Adhoc Network. Clients shared files are stored in database and owner IP address. If any client give request for any shared file then Server will search in database and send filename, IP address to client for downloading the file.

Fig -3:Proposed System Architecture

Android mobile devices when enters in Adhoc Network, Network Discovery Manager will search the online clients. For security reason all clients have provided the facility of login and registration. All the details are stored in database in Server side for verification. With the use of communication manager client can chat with other clients who are online in adhoc network. Clients can share the files and download shared file. When the device is connected through Bluetooth initially there was problem regarding to the coverage area this limitation can be removed by using different techniques like:

1.   Piconets with single slave operation
2.   Multi slave operation
3.   Scatter net operation

IV. APPLICATIONS

1.   The system can be used across a college campus.
2.   It can also be used in Military Application.

V.   RESULTS

The above graph comparison of Bluetooth and Wi-Fi network is done with respect to security where the graph is plotted for message sent with respect to time.It is observed that Wi-Fi network provides more security as compared to Bluetooth.
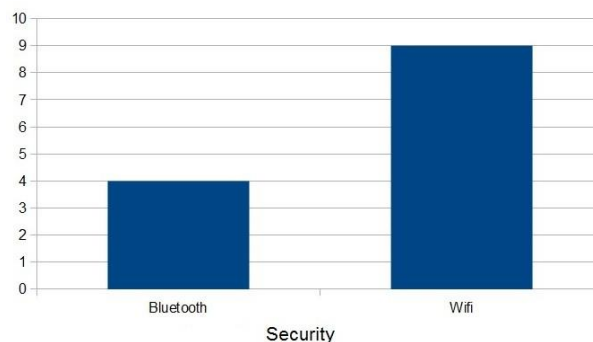
Graph -1: Graph for security

The graph states the comparison between the two networks through Time Consumption. The messages sent through Wi-Fi network are more faster and within less time limit.
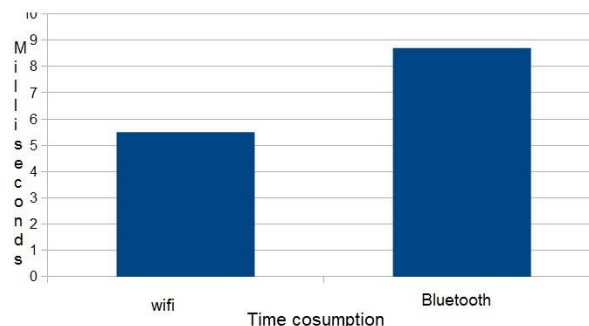
Graph -2: Graph for Time Consumption

VI. CONCLUSIONS

The proposed application for Android device is known as Seamless File Sharing .It provides solution for peer to-peer systems, as peer-to-peer system experience frequent disconnections because of users mobility. In this application data packet charges are cut down as there is no use of internet. Ad-hoc network is created Wi-Fi and Bluetooth as they are also free of charge .It provides capacity of simultaneous sending and receiving of files at same time .Power competence is taken in concerned to extend battery life.

VII. ACKNOWLEDGEMENT

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