Data Transmission between Computers via Mobile as a Medium

Satya Sesha Rao Gopi, Pavan Sai Kumar Gopi

Abstract — This paper presents information regarding One-Way data transmission or parallel way data transmission between two computers and computer to mobile/tablet or vice-versa with an inter – mediate medium as mobile for transmission within 'N' number of computers and mobiles/tablets connected together with a key feature of unlimited data transmission without third party involvement.

Keywords— Hotspot, Half duplex, Full duplex, Router, Bandwidth. Broadcasting

I. INTRODUCTION

Generally, people in and around Domestic and Corporate Environment transfer data from one computer to another with a medium of Wi-Fi (Router), LAN cable or other Network [1].If at all there is a power outage, while data transmission, there may be inconvenience and also when there is **huge traffic** in transmission through LAN cable or when the cable gets damaged, there would be a **loss of data** in transmission [2]. If at all a situation where two computers wants to transfer their data in an efficient and secure way with a limited resources available such as no Wi-Fi(Router), no LAN cable or network, speed issues with Bluetooth and Huge data transfer in a closed environment. Consider an example, if two persons would like to transfer a gaming software of 14 GB from one Pc to another Pc where their pen-drive is limited to only 8 GB maximum storage capacity, no Wi-Fi around, no LAN cables and if they are using featured mobiles with limited storage capacity then there will be no chance of data transmission. As data transmission from computer to computer via mobile as medium can brings a revolutionary change in the data transmission.

II. PROCEDURE

A designed Application should be hosted in both computer devices in order to get connected to the specified Hotspot and transfer the data. As you can see in the below diagram, the computer devices are connected to Mobile Wi-Fi Hotspot [3] which creates a private and closed secured network environment, where the data is transmitted in an efficient and faster way without any external storage devices needed.
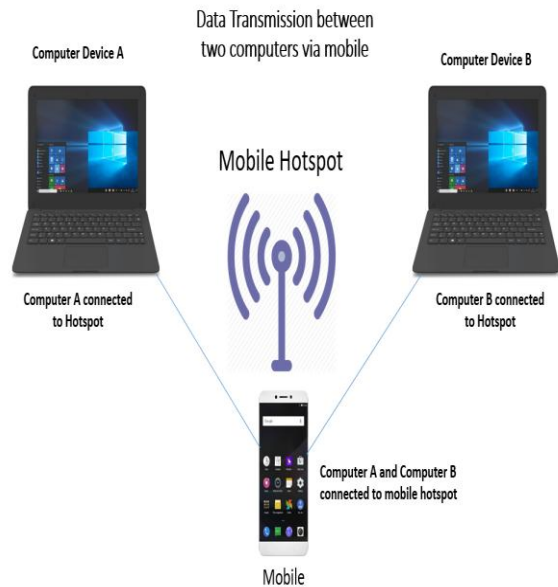
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Figure-1: Data transmission between two computers via mobile

Firstly, Assume Computer A as a Sender and Computer B as a Receiver as shown in the figure-1. The Sender hosts the given application and attaches the required file or content that is to be transferred, now it scans devices which are inter connected to the mobile hotspot where these connected devices are shown to the sender's window through which the sender can be able to select the required receiver among others who are connected. Now the data gets transferred to the receiver where time depends all up on the data content capacity and vice-versa is also possible.

We can connect to N number of computer devices within the Mobile Wi-Fi Hotspot Environment in such a way that the clients can select the Receiver they need for data transmission but only One-Way Transmission [4] can be possible (Either data transmission from Computer A to Computer B or Computer B to Computer A). By default every computer device will act as Receivers other than the sender computer device.

Figure-2 represents the default way of data transmission from sender to a selected receiver from multiple receivers (A, B, C and D) those who are inter connected to the mobile hotspot.

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105

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Sender can select any of the receiver
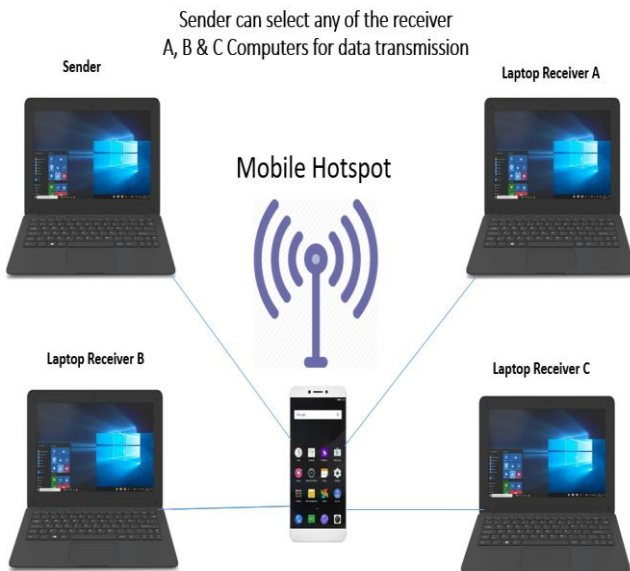A, B & C Computers for data transmission

Figure-2: Default hotspot transmission

Figure-3 represents the explanation of data transmission of computer sender to receiver of a computer or a mobile and vice-versa which includes the mobile sender can transmit its data to receiver of computer or a mobile which are inter connected to the same mobile hotspot.

As the major data transmission is being done through computer to another computers, it is been included with mobile devices also to transmit and receive the data as now a days transferring of multimedia among devices is one of the major issue.
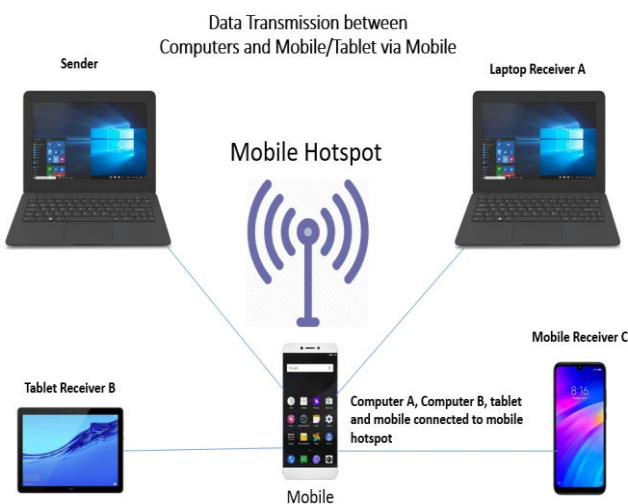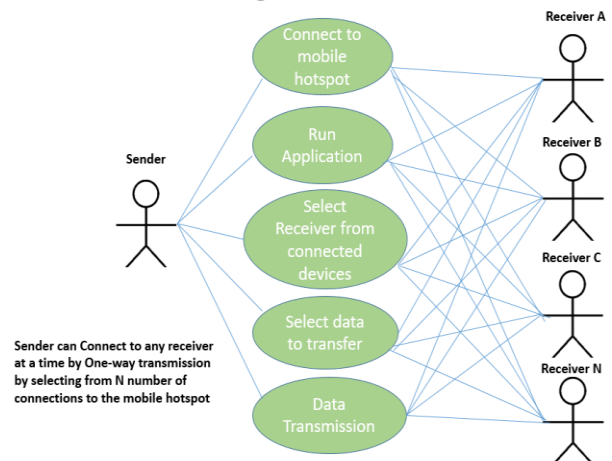

Figure-3: Data Transmission between computer to computer or mobile and vice-versa

III. IMPLEMENTATION

➢ Every computer device that needs to transfer or receive data should consist of the Application that connects the other computers with it.

➢ Once the sender side client is connected to required mobile hotspot, the client attaches the data that is needed to be transferred.

➢ As this concept is defined by Wi-Fi Direct Technology [5], the application portal of sender's side should list out all the other computers connected to the same mobile hotspot within the range.

➢ Then the sender client can select the required computer Wi-Fi signal that the client wants to transmit the data.

➢ As the all other devices act as receivers as default, the selected computer Wi-Fi signal will get the data directly without any delays in order to receive the data from sender client.

➢ And also Vice-Versa is possible with the same above mentioned steps when followed back by changing the sender and receiver client computers but the medium as mobile won't be changed, it remains same for all the transmissions of data performed.

➢ The Below Use Case diagram expresses the N number of receivers getting connected to mobile hotspot and the sender selects the required receiver from the list and sends the data by the Wi-Fi Hotspot medium between the computer sender and receiver.

➢ The data transmission between computers can be possible in a parallel way but in one-way transmission only. It all depends up on the mobile storage and transmission capacity in order to work with parallel data transmission of computers as show in below figure.

➢ Computer A transfer data to Compute C via Mobile Wi-Fi Hotspot in One-Way Transmission simentenously Computer B transfers data to Computer D from the same Mobile Wi-Fi Hotspot, it all depends up the mobile storage capacity and transmission capacity of the mobile Wi-Fi Hotspot.

The below diagram represents the data transmission from computer to mobile, mobile to computer and mobile to mobile one – way parallel data transmission using a single mobile hotspot without disturbing other device communications.

Parallel data transmission from single mobile hotspot

Parallel data transmission from single mobile hotspot
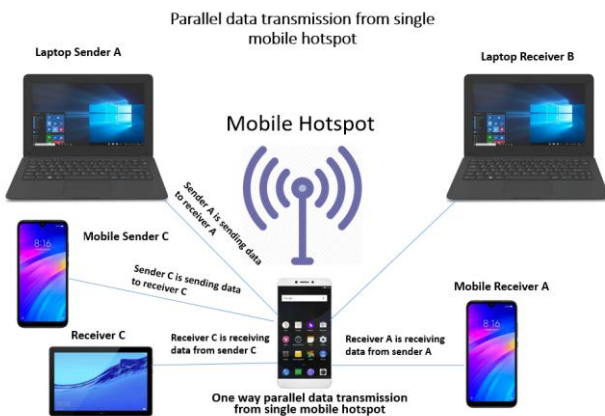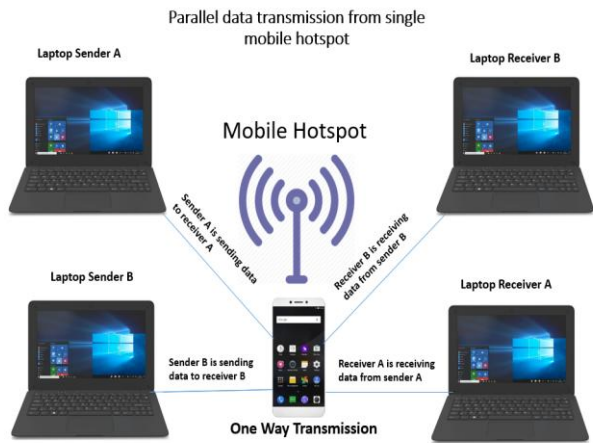
IV. LIMITATIONS

➢ Bandwidth is limited between computer devices as the mobile hotspot with 200kb/s – 500kb/s.
➢ One – Way Transmission only allowed.
➢ Mobile with Wi-Fi Direct Technology is must.
➢ Computer device with Wi-Fi modulator is must.
➢ It doesn't support broadcasting [6].
➢ Both computer and mobile should have enough storage capacity of data transmission.
➢ Data transmission speed limit depends up on how many devices are under usage of access connected together for the mobile hotspot.

V. APPLICATIONS

➢ Domestic environment consists of minimal support in order to transmit the data such as no Wi-Fi, no LAN cable, etc. Hence this method of transmission will be helpful.
➢ Corporate environment consists of delays or data transmission lacks while their work is under progress due to power cut, LAN cable damage, etc. Hence this method will helpful in data transmit in an efficient and secure way.
➢ Helpful when no external devices are available within the environment.
➢ Can be used when both sender and receiver needs their data to be transmitted in a secure way without any third party involvement in middle.
➢ Faster in providing software transmission from computer to computer for installations without any delay.

➢ Multiple devices can be connected together under one network and transmit their works without any delays which include computers, mobiles, tablets and so on.

VI. CONCLUSION

Now a day it is not only data transmission but also data transmission along with security is needed where this way of data transmission will be the best way of transmission in a closed environment with limitations. As of now it's limited with One-Way (Half Duplex) transmission but later on we can expect Two-Way (Full Duplex) and Multi-Way transmission using Wi-Fi Direct Technology.

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AUTHORS PROFILE

Satya Sesha Rao Gopi, completed my Bachelor of Technology in Information Technology at Vardhaman College of Engineering, Hyderabad, India. This is my first research paper that is published. It took one full Year to full fill all the requirements of the research project paper proposed. This research just started when I was in need of transferring data between computers without no means of External devices, Wifi zones or Ethernet cables in a closed environment. I have a job experience of 9 months as "Administrative Manager" in "Sarhya Management Services Pvt Ltd." and its sister companies "VVS Sports Academy, VVS Foundation and First Innings Play School" which made me thing and enhance my research field in finding out a solution for problems faced in data transmission between computers and other devices when there is no external device or internet facility to transfer data while power loss or in closed environment.

Pavan Sai Kumar Gopi, I completed my graduation in stream of Computer Science and Engineering at Vardhaman College of Engineering, Hyderabad India. Currently I am a Software Engineer at Infor India Private limited Hyderabad with 3+ years of experience in ERP Product Development. This is my first official paper publication apart from my other research papers that I have published with in my office limits. We have come up with an idea to solve a common problem that I faced during the copy over of huge data from one devices to another using external hard drive, pen drives or lans etc... We even had to wait for a long durations of time to copy over the whole data from one device to another. Just when we had this idea of transferring of data using mobile hotspot as a medium between two external devices. This would overcome the requirement of external storage devices or any lan cables. And also this research output would help out people to copy over data at a very high speeds, over the use of mobile hotspots. In terms of college I was a member of IEEE (Institute of Electrical and Electronics Engineers) Computer Science Chapter along with CII (Confederation of Indian Industry) Student Chapter.

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107

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