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Development of Wireless USB Flash Drive using Omega 2+

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Abstract – The aim of this paper is to design a Wireless USB flash drive in which the USB flash drive can be used without connecting using the dongle. This makes the data transfer using USB more sophisticated and also provides better speed.

USB flash drive is one of the commonly used memory storage device by all the people. The main reason for this is because of its compatibility and user friendly memory storage device. It can able to store data of any kind. The data stored in the USB flash drive can be erased, edited, formatted. The amount of data that can be stored depends upon the size allocated for the USB flash drive.

Memory spaces commonly used are 2GB, 4GB, 8GB, 16GB and 32GB. The cost of the USB device varies depending upon the memory space of the flash drive. The USB flash drive can be operated by connecting it to a dongle in the PC or laptop. Now my paper is about synchronizing the data available in the USB flash drive with the PC or laptop. This can be achieved by implementing the effect of few modules available and also by modifying the design of the USB flash drive.

I. INTRODUCTION

On February 17, 2004, at the Intel® Developer Forum, Intel Corporation and other technology industry leaders announced the formation of the Wireless USB Promoter Group. Focused on delivering the first high-speed personal Wireless interconnect, the group includes Agere Systems, HP, Intel, Microsoft Corporation, NEC, Philips Semiconductors, and Samsung Electronics.

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With diversification of systems and their operating environment, sometimes it becomes difficult to transfer data from one system to another. Due to this limitation the need is felt of transferring data wireless between the two systems not having proper channel for communications. This can be done by using a Wireless USB device. Generally, we used to transfer data by connecting

the pen drives or hard disks to the computers, laptops or sometimes mobile phones but here proposed a model to transfer the data between the storage device and computer systems using Wi-Fi technology i.e. without establishing a physical connection between them. With that make the old USBs and hard Drives can be made wireless as well.

More than Four devices can be connected at a time. Data reading and writing in USB flash devices is only possible by using USB cables and USB ports of PC. This work explains an idea of Wireless means of data transfer for USB devices without using USB cables and ports of PC. So, by this device we can easily transfer our data directly from pen drive to computer systems or smart phones and vice versa.

II. LITERATURE SURVEY

Generally, we used to transfer data wirelessly between two devices by using controller and PC But it is not always possible to carry such a large size device to the particular location. So to overcome this problem, here they designed a hardware which is more compact to carry anywhere. With the help of this project we can not only transfer the data but also we can see secure the data.

Kaustubh Gaikwad,Sneha Ojha,Shreyas Surlikar,Supriya Zende [1] they have suggested the station is connected to a PC over USB, and using our application-layer software on PC, allows the user to read and store data on the device. 20 fingerprints can be stored on the device, and each fingerprint has a separate logical volume that the corresponding user can utilize as their own private storage space. Internet of Things is wide focused on academia and industrial applications. Wireless Universal Serial Bus (USB) based on Ultra-Wideband (UWB) and Multiple-Input Multiple Output (MIMO) technology is a major research filed of the Internet of Things for extending the wireless link coverage.

Runfeg Yang,Chunbo Luo [2] they have suggested a study of propagation channel and system implementation with low power and cost requirements. The receiver fixed point performance is measured and the results are compared with different system performance in different channel modelling.

Amrithaganesh.s [3] they have suggested to design a Wireless USB flash drive in which the USB can be used without connecting using the dongle. This makes the data transfer using USB more sophisticated. It also provides speed up to 1Mbps.

Tomonori Yazaki,Itsuro Morita and Hideaki Tanaka [4] they have suggested to newly design and fabricate an optical wireless USB 2.0 system with a 1Gbit/s optical transceiver. A performance of the 1Gbit/s optical transceiver is evaluated, and a wireless music/video data transfer is successfully demonstrated using the system.The USB memory size broad or multi band antenna using the folded monopole antenna, which is made of the U-shaped metal plate without the wide ground plane, has been successfully developed. The proposed antenna is small in order to be installed in the compact

wireless USB-unit and covers the 2.45 GHz band for wireless LAN and the wide band width from 3.1 to 10.6 GHz for UWB.

Kentaro Sekine,Hisao Iwasaki [5] they have suggested antenna is having the band notch at 5 GHz band. This paper introduces it's the novel antenna configuration and describes the characteristics of the novel folded USB memory size antenna. Details of the simulated results of the proposed antennas are presented and discussed.

Kang, Dongoh Kang, KKyuchang iryong Ha and Jeunwoo Lee [6] they have suggested to define an additional function of smart phone operated as a wireless USB storage device suggests the usage scenario in virtual computing environment estimated as future home computing infrastructure based on virtualisation technology.

Abhishek Bit, Dr. Martin Orehek, Waqar Zia [7] in this paper presents the results of the comparative analysis of two different protocols that use or could potentially use the Ultra-Wideband (UWB) radio technology – Certified Wireless-USB and Bluetooth 3.0 with UWB. Bluetooth 3.0 with UWB is found to have a number of advantages over Certified Wireless- USB. These include lesser overheads, higher throughputs, higher power efficiency, better device association mechanisms, dedicated profiles, and support for data broadcast. The Bluetooth 3.0 protocol with UWB as the high speed radio is proposed as the more preferred option for integration into mobile devices.

Tomonori Yazaki, Itsuro Morita and Hideaki Tanaka [8] in this paper Internet of Things is wide focused on academia and industrial applications. Wireless Universal Serial Bus (USB) based on Ultra-Wideband (UWB) and Multiple-Input Multiple Output (MIMO) technology is a major research filed of the Internet of Things for extending the wireless link coverage. This paper presents a study of propagation channel and system implementation with low power and cost requirements. The receiver fixed point performance is measured and the results are compared with different system performance in different channel modelling.

III. BLOCK DIAGRAM

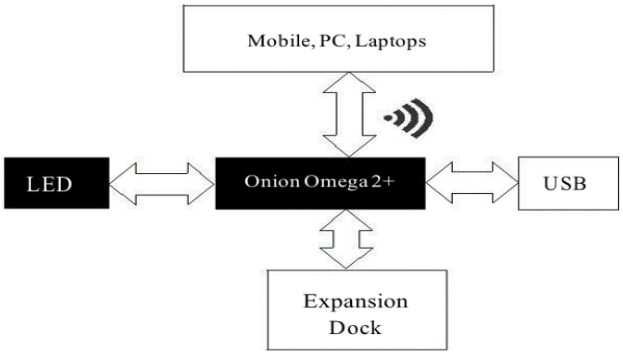

Fig1: Block diagram

IV. WORKING

Initially the USB flash drive is unlocked by entering the correct combination of the security code. Once it gets unlocked, the wifi module gets activated, then through the PC the RF wave of frequency 2.4GHz is generated and is searches for wifi module. Once we select the wifi module of the USB flash drive, the USB flash drive gets synchronized with the PC and now it is ready to perform any type of operation such as copying the files, deleting the files, editing the files in the memory of the flash drive. The transfer of data is estimated to about 100Mbps.It may vary according to the file size.

The onion Omega basically creates an wifi of its own with the user name and password which can be accessed by users with it. [fig 2].

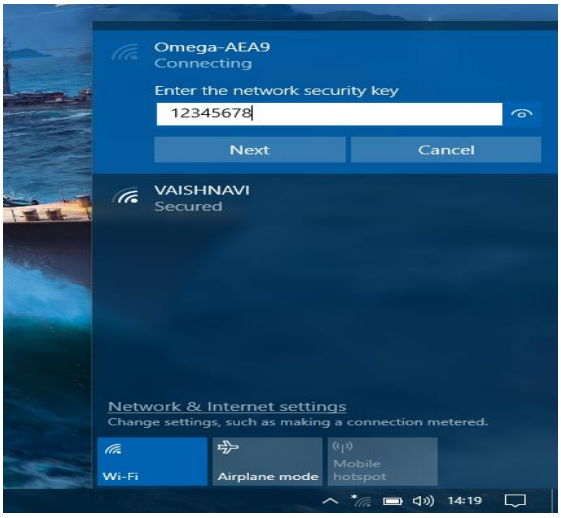

Fig 2: wifi connection with omega

After connecting to wifi, the Omega setup is performed completely. After the setup the directories of Onion Omega are shown in the Networks in My Computer or This PC [fig 3]. Where we can access the files which are in the USB and Memory-card.

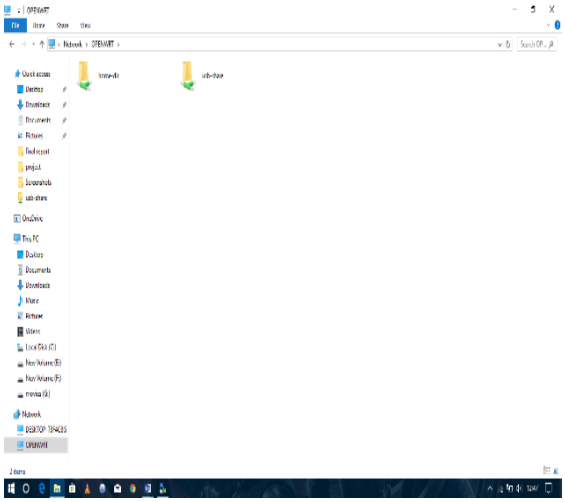

Fig 3: Directories of Omega

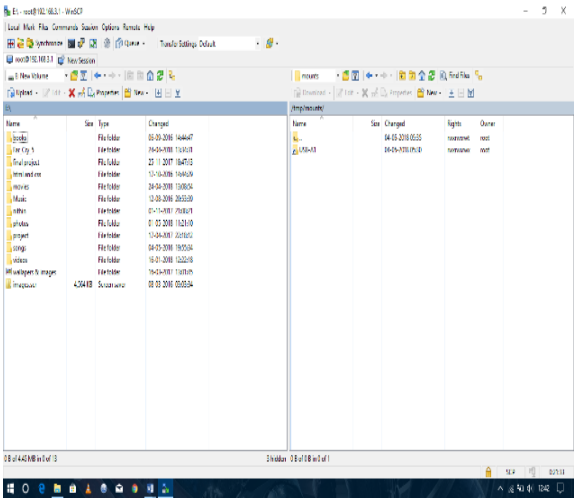

Fig 4: WinSCP

Using the third party application WinSCP for PC and Laptops [fig 4], AndFTP for Android phones [fig 5] the data can be accessed by the users.

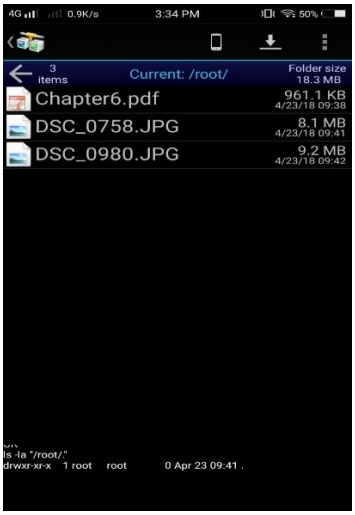

Fig 5: AndFTP

V. HARDWARE AND SOFTWARE

- USB FLASH DRIVE
- ONION OMEGA 2+
- EXPANSION DOCK
- SAMBA SERVER
- C++
- ANDRIOD MOBILE
- AndFTP
- WinSCP

VI. CONCLUSION

This project aim on “Why not” Wireless USB flash drive when there is a wireless mouse and Keyboard. This is more compatible. The user can access the USB flash drive by placing it at some distance from PC.As technology improves, we can find solution to increase the speed of the data transfer. Since there exists some hurdles during wireless communication Comparison table of speed in mentioned in the table 1 below.

It shows the uploading and downloading speed of Android and PC in the first two case. In the next two cases the uploading and downloading in parallel speed is mentioned.

Type of connection / no. of devices connected	Time taken to Upload the file*	Time taken to Download the file*
PC / 1	~10sec	~10sec
Android / 1	~25sec	~9sec
Android / 2 (parallel upload And download)	~40sec	~10sec
PC & android / 1 & 1 (parallel upload And download)	Android ~32sec PC ~14sec	Android ~11sec PC ~13sec

*We used 10,881KB (10.6MB) of PPTX file to upload and download.

VII. APPLICATION

1. Educational Institutions**:** It is used in educational institutions for sharing notes to students at a time without any problem.
2. Digital Library: It is useful to share data between the users according to their need of access.
3. Seminars: During seminars the information about the topic, references can be shared among the people of the seminar using this.
4. Workshops: The information of the technical workshop being conducted, the required data sheets and reference papers can be shared among the students.

VIII. REFERENCES

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