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OWNCLOUD Using Raspberry Pi

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ABSTRACT

In 'ownCloud Using Raspberry Pi' project we're going to make a Raspberry Pi Own cloud server this can act as your very own personal cloud storage. As the protection of your privacy is a big issue nowadays moving your data to private cloud storage is a better option. The cloud server is configured on a Raspberry Pi 3 model B module. The router connects the server to internet. The server has an optional USB hard disk for larger data storage. The wireless network card/adapter on the Raspberry pi server is used to connect the server to ownCloud (an open source cloud platform). Weaved is used to get remote access to do setting of Raspberry Pi from any device such as smartphone. Various services such as SSH, HTTP and VNC are configured on Weaved and controlled through it. The admin alone has access to ownCloud account. Admin can provide various services to users through Weaved. Our project will provide you free data storage as per requirement. This project gives you the freedom for using space and savings with strong control over system.

Keywords :— Raspberry Pi 3 model B, ownCloud, Domestic ADSL Router, Weaved.

I. INTRODUCTION

A cloud is massive collection of storage of various amounts of data gathered together at some servers, which helps client to connect or access the data from the server. As the data keeps on increasing there is a massive need of storage server which can hold tracks of client, their profiles, their data such as photos, document file, videos, etc. Moreover, there is risk, if our server crashes there might be loss of personal data of someone or even if the data gets theft. Sometimes the user forced to see the advertisements of products and deals on the screen while browsing which user have search for on third party applications or sites, this means somewhere in system the user data is been shared and level of privacy is not maintained. Since this shows that, there is need of storage server of own as well as privacy maintenance and security.

Our project ownCloud using Raspberry Pi provides solution for both the above given lacking qualities of cloud. Firstly, your data will be available to you all the time i.e. your personal hard drive will act as your own cloud server and secondly your data will get maximum about of security so that it won't get theft or crashing of server won't be a problem anymore. Our project will also allow you to share your server with others with proper authentication giving to them.

II. OWNCLOUD

Own cloud provides with many different facilities which other web services fails to provide, like admin knows where is server located, security is in our hands, one can ask for maximum storage space with minimum cost. Own cloud gives admin the power to control each user, admin can grant or revoke the user, he can allocate the space to a user as per their demands. Own cloud gives you facilities to add external storage drive if your primary drive is about to get full. One of the key feature of the own cloud is synchronization which helps user to get the user sync the data automatically if the user are connected with the internet. Admin can make the group and can share the data in group so that everyone can access the same data. While sharing, it also give the password protection feature, so that only authorize people can open the data even if they get the file they won't be able to access it. By many such rich factors own cloud is superior from many other cloud server which are available freely [7].

III. RASPBERRY PI
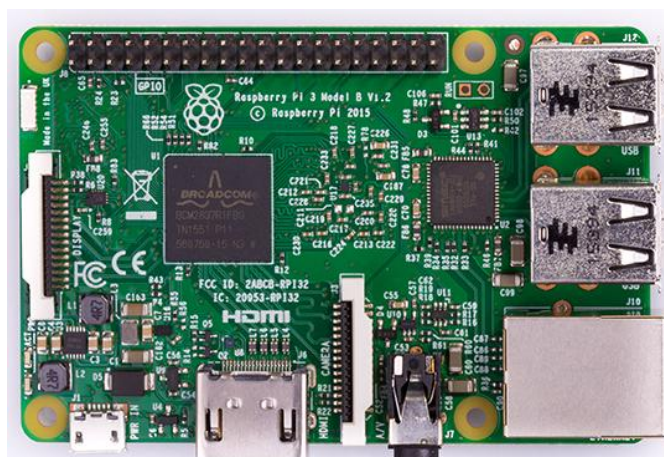

Fig. 1 Raspberry Pi 3 module B[11].

As mentioned above, we require a server to setup the cloud and for this purpose we have used Raspberry Pi.

Raspberry is a platform on its own which works similar to a whole computer and provides various inbuilt functions like Bluetooth, Wi-Fi, Expandable memory option, HDMI port, USB port and various other facilities. Raspberry pi is configured as a server by mounting external storage on it.

IV.WEAVED

Since we have performed our project on the college network, we are basically using a restricted network with firewalls and blocked ports. Hence, port forwarding is not a feasible option for the scope of our project.

Weaved makes use of tunnelling protocol to solve this problem. It provides a unique public IP to the device which is a function of its physical address. Hence, we can say that it makes a path or a tunnel to the destination server device and forwards requests of port 80 on it.

V. ARCHITECTURE
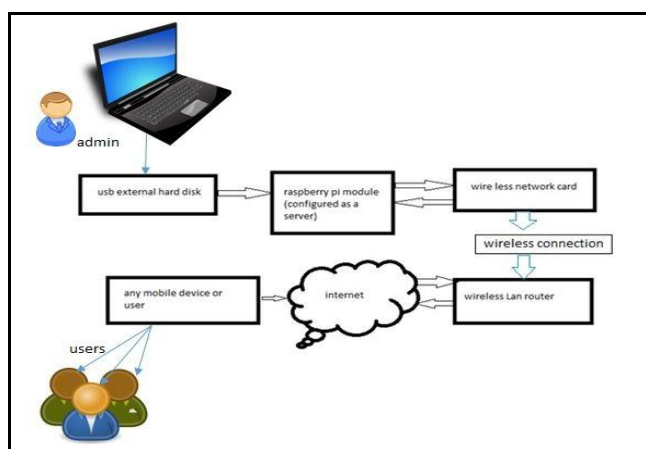
The flow of the project is as follows:

1) We access the shell of raspberry pi through a remote computer connected to raspberry pi on a network through SSH login.
2) We also install VNC server on Raspberry pi which uses remote frame buffer (RFB) protocol to show the GUI enabled desktop of Raspberry pi. This gives us more ease of access than the command line text environment through SSH login using PuTTY.
3) After we have successfully accessed the pi we setup an Apache sever on Raspberry pi.
4) Now we install cloud service on Raspberry pi.
5) The Raspberry pi cloud server is now behind the domestic ADSL/DSL router. The router connects the pi server to internet.
6) Request from users for server access is forwarded to pi by the router only when we set up port forwarding for the Apache server on port nos. 80 and 443(http and https port numbers).
7) Weaved is a secure alternative to port-forwarding.

8) After the cloud service is setup on Raspberry pi users can login through the ownCloud portal and store their data on Raspberry pi from any corner of the world.

VI. APPLICATIONS

1. Lab Environment
2. Small scale companies
3. Personal Cloud Storage

CONCLUSION

This project gives you the freedom for using storage space and savings with strong control over system .We configure ownCloud on raspberry pi, then provide services to use Own storage on the similar lines of Dropbox and Google Drive. Thus, the confidentiality or integrity of the information or data. The client or user stores on the server is not reliably maintained at all intervals of time. The first method seems to be expensive, therefore configuring a server on our own raspberry module seem to be a better option for our own private storage. As it becomes our own created cloud we have full idea about where our data will be saved so this provides utmost security of our data. We also aim to provide reliable cloud services for personal use and make it a marketable product for personal cloud storage in the long run.

REFERENCES

[1] Gregus, M., & Karovic, V. (2015). Practical Implementation of Private Cloud Based on Open Source ownCloud for Small Teams - Case Study.2015 10th International Conference on P2P, Parallel, Grid, Cloud and Internet Computing (3PGCIC). doi:10.1109/3pgcic.2015.149

[2] Hildmann, T., & Kao, O. (2014). Deploying and Extending On-Premise Cloud Storage Based on ownCloud.2014 IEEE 34th International Conference on Distributed Computing Systems Workshops. doi:10.1109/icdcsw.2014.18

[3] Prabha, S. S., Antony, A. J., Meena, M. J., & Pandian, S. R. (2014). Smart cloud robot using raspberry Pi.2014 International Conference on Recent Trends in Information Technology. doi:10.1109/icrtit.2014.6996193

[4] Jadeja, Y., & Modi, K. (2012). Cloud computing - concepts, architecture and challenges.2012 International Conference on Computing, Electronics and Electrical Technologies (ICCEET). doi:10.1109/icceet.2012.6203873

[5] Soares, T. S., Dantas, M., Macedo, D. D., & Bauer, M. A. (2013). A Data Management in a Private Cloud Storage Environment Utilizing High Performance Distributed File Systems.2013 Workshops on Enabling

Technologies: Infrastructure for Collaborative Enterprises. doi:10.1109/wetice.2013.12

[6] Xu, W., Groves, B., & Kwok, W. (2016). Penetration testing on cloud---case study with owncloud. Global Journal of Information Technology,5(2), 87. doi:10.18844/gjit.v5i2.198

[7] OwnCloud. (n.d.). Retrieved November 12, 2016, from https://ownCloud.org/features.

[8] (n.d.).Retrieved December 16, 2016, from http://research.google.com/archive/gfs.html.

[9] Cloud computing security. (2017, January 11). Retrieved January12,2017,from https://en.wikipedia.org/wiki/Cloud_computing_security.

[10] Networking , Switches, Wireless , Broadband, Security & Storage Solutions. (n.d.). Retrieved June 24, 2016, from http://www.dlink.co.in.

[11] http://zdnet3.cbsistatic.com/hub/i/r/2016/02/25/a210428f-acf7-4237-a0db78fc4f263617/resize/1170x878/640f0f756b85e43b80a325a3868467f8/raspberry-pi-3-model-b.jpg

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