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RESEARCH ARTICLE

Private Cloud Development to Improve Reliability and Security

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Abstract-- *Own cloud is a web application or a software system for what is commonly termed “file hosting”. It can store and serve content from a centralized location, much like Dropbox [1]. The uncomforted about the level of data analysis and surveillance involved in signing up for corporate internet services, when using cloud from any company like Google ,Amazon or IBM, is a main problem. This mean less security and privacy for the files that are stored, because the real owner of cloud is stranger or company.*

To solve this problem, own cloud is developed to store and share documents, calendars and contacts in a secure way, which also embraces open standards. This paper demonstrates the way of creating, and configuring own cloud on own computer using Ubuntu12.04 and LAMP stack.

Keywords-- *Own cloud, Dropbox, file hosting, Ubuntu 12.04, LAMP stack.*

I. INTRODUCTION

Own Cloud was started and is still maintained by Frank Karlitschek, the German open source software developer. He presented at Camp KDE in 2010 [2]. Own Cloud provides safe, secure and compliant file sync and share solution on servers you control. It's open source file sync and share software for everyone from individuals operation.

With own cloud user can share one or more folders on his/her PC, and sync them with own cloud server. Place files in user local shared directories, and those files are immediately synced to the server, and then to other PCs via the desktop client. Simply log in with the web client and manage private files there [3]. Fig.1 illustrate the main structure of own cloud.

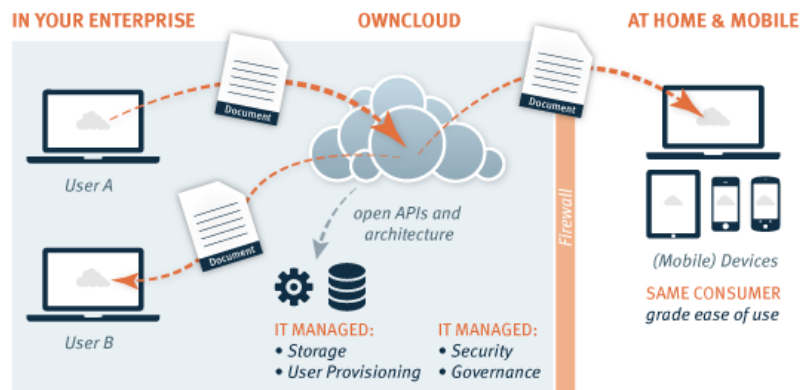


Fig.1 Own Cloud Main Structure

II. PROPOSED APPLICATION

There are many ways to build and configure own cloud on different environments such as windows, Android... etc. [4]. Linux has been chosen in this work to develop a private cloud by exploiting (Ubuntu 12.04), because Linux is open source operating system and it's more secure than other operating systems [5]. When we build own cloud manually this mean we have to create database and change its configuration regarding to our requirements. In our own cloud 5 gigabytes (GB) has been allocated of cloud storage space in own computer.

III. METHODOLOGY

LAMP stack is abbreviation for (Linux, Apache, MySQL, PHP), we must install them before create own cloud.

1st Install LAMP Stack

To install them, these steps should follow:

- 1- Install Linux (Ubuntu 12.04): it is open source Operating System. We install it as virtual machine inside windows 7.
- 2- Install Apache: is the world's most widely-used Web server software. Originally based on the NCSA HTTPd server [6], Apache installed by the following command.

```
sudo apt-get install apache2
```

- 3- Install MySQL: MySQL is a popular choice of database for use in web applications, and is a central component of the widely used LAMP open source web application software stack. These commands are for installing MySQL:

```
sudo apt-get install mysql-server libapache2-mod-auth-mysql php5-mysql
```

Activate MySQL by:

```
sudo mysql_install_db
```

Finish up by running the MySQL set up script:

```
sudo /usr/bin/mysql_secure_installation
```

- 4- Install PHP: is an open source web scripting language that is widely used to build dynamic webpages.
To install PHP:

```
sudo apt-get install php5 libapache2-mod-php5 php5-mcrypt
```

Here we chose to install the module php5-mysql:

```
sudo apt-get install php5-mysql
```

2nd Create Own Cloud

We will first download the release key [7] associated with the own Cloud software by the following commands:

```
cd  
wget  
http://download.opensuse.org/repositories/isv:ownCloud:community/xUbuntu\_12.04/Release.key
```

Now add the key to apt so that it can validate the files:

```
sudo apt-key add - < Release.key
```

On validation we will find the file without directory, we test another method by adding the ownCloud repositories.

```
echo 'deb  
http://download.opensuse.org/repositories/isv:ownCloud:community/xUbuntu_12.04/ /' | sudo tee -a /etc/apt/sources.list.d/owncloud.list
```

Finally, update the package database and install ownCloud and MySQL:

```
sudo apt-get update  
sudo apt-get install owncloud mysql-server
```

You will be asked to set a root password for the MySQL database admin user during installation.

3rd MySQL Configuration

Configuring the created ownCloud server is necessary to take advantage of the more robust MySQL database instead of the SQLite default implementation. To do so, we must configure MySQL first. Type the following commands to initialize the database and secure the system:

```
sudo mysql_install_db  
sudo mysql_secure_installation
```

Selected password during the MySQL installation has to feed for signing into MySQL as the root user by typing:
`mysql -u root -p`

In this step the password must be entered twice.

Create a database by typing:

```
CREATE DATABASE owncloud;  
Query OK, 1 row affected (0.00 sec)
```

Create and assign privileges to a new MySQL user to handle database operations for ownCloud:

```
GRANT ALL ON owncloud.* to 'owncloud'@'localhost' IDENTIFIED BY  
'select_database_password';
```

Exit MySQL by typing:

```
Exit
```

4th Final Configuration

We will go to the browser and write in the URL bar: 10.0.2.15/own cloud. The 10.0.2.15 is the IP Address of the own computer, then the page in Fig.2 will appear.

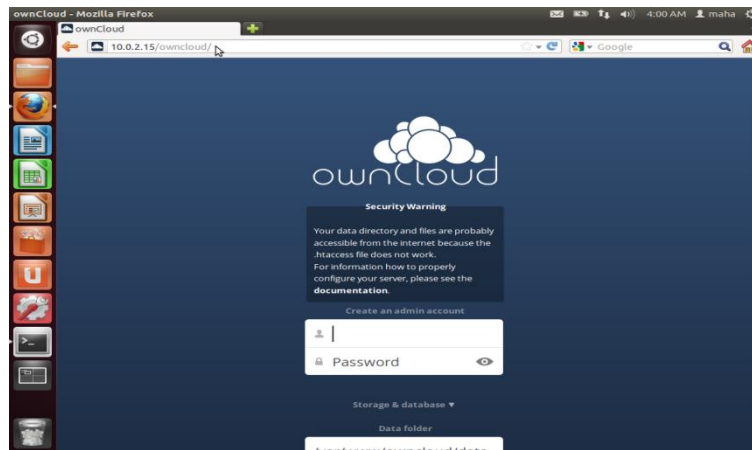


Fig.2 Own Cloud

In case of the main page doesn't appear, that mean there is no database or PHP modules. In this case we must support the cloud by installing PHP curl library by:

```
sudo apt-get install php5-intl php5-curl
```

After appearing of main page ,We will select MySQL from options and start to enter the same information that we entered in our MySQL during the configuration . Now we can create an admin account , see Fig.3.

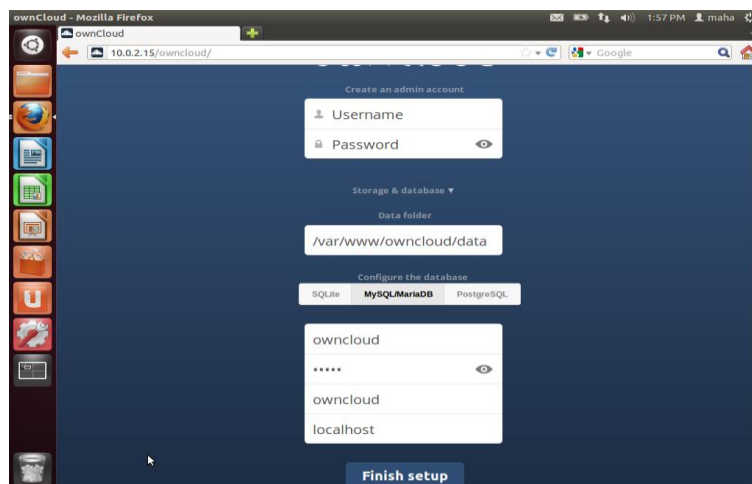


Fig.3 Creating Admin Account

Fig.4 illustrates all steps in one flowchart.

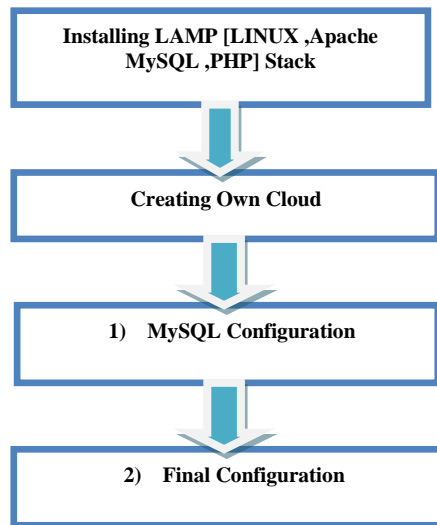


Fig.4 Steps developing own cloud

IV. RESULTS

Own cloud has been seen when developer fed all required information, then photos, music, documents, video can be shared and also host owner web applications, see Fig.5.

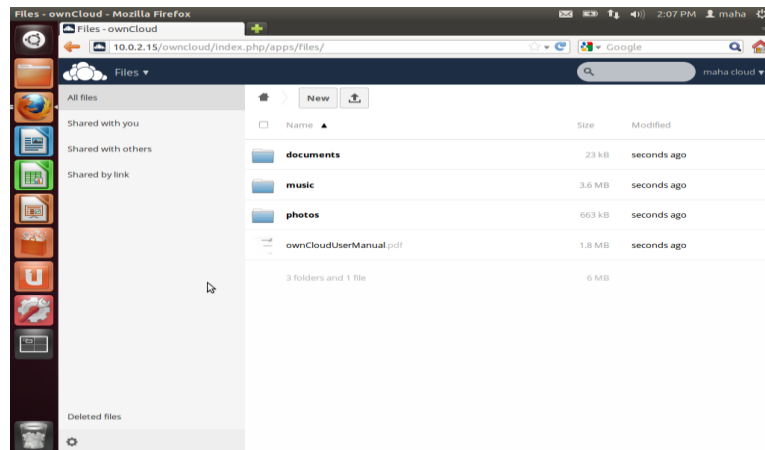


Fig.5 The Contents of Own Cloud

User can upload his own files to own cloud by using icon called (New), or by URL link. Then he can download and open files from own cloud from any other computer. See Fig.6.

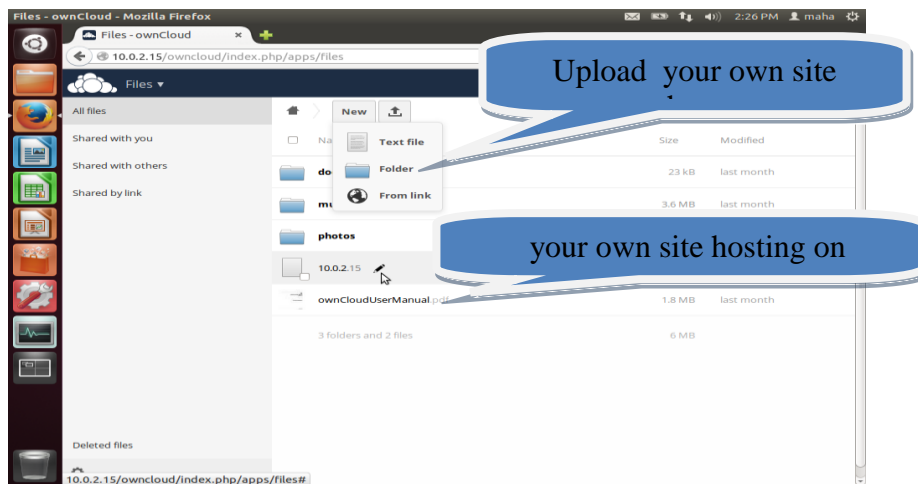


Fig.6 Store in Own Cloud

V. CONCLUSION

This paper has demonstrate that user can store folders, files, or even own site without worry about intruding his data because the only owner of this cloud can review, owner has all management and controlling on this cloud.

REFERENCES

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