DEFINING CLOUD COMPUTING

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Abstract: With the development of computing technologies that have been at many points in our lives, cloud computing technology has begun to be used in a wide range of environments from a portable computer to a server computer. Accessibility is easy, cloud computing is at the top of the reasons for preference. Big companies in information technology (Microsoft, Google etc.) are leading the cloud computing services. It is thought that the installation of the cloud computing system is a big financial budget. However, a cloud computing system can be installed even in our home or office computers.

Accessibility is easy, cloud computing is at the top of the reasons for preference. Cloud computing facilitate access to data greatly. However, it should be known that the data are collected on the servers of the cloud computing service provider. In terms of importance, more or less important data are stored in cloud computing servers. It is important not to forget that in the event of a corruption of trust relations it will have serious results.

The aim of this work is to explain the installation steps of our own cloud computing server and client system on a virtual or real server system. It is to explain that a cloud computing system is easily installable. A cloud computing system can be set up in short steps and at low cost. In this way, contributed to the growth of national software works. The data is stored in cloud computing servers, one or more national and reliable institutions.

Keywords: Cloud Computing, Server, Linux Operating System, Open Source Software, OwnCloud, Cyber Security

Introduction

Cloud Computing System
While it is not known exactly when the term cloud computing is known (Estimated 1950s), this concept is the most generic name given to the Internet-based information services that can be shared among users by using the server computers and similar devices connected to the Internet. It is about the provision of services to be taken by using software at minimum level without the need for service infrastructure by the user. Cloud computing provides services based on three basic models. These are Software as a Service, Platform as a Service, Infrastructure as a Service.

With cloud computing, data, applications and many other information services are stored in the server systems of the provider or organization. Ease of use is one of the great benefits. Google Drive, Microsoft OneDrive, cloud services are the obvious. With mobile, tablet, laptop or desktop computer access, data can be accessed continuously wherever an Internet connection is available. While cloud computing has good sides, it also has bad sides. The presence of data in a server system that is unaware of the user can lead to unpredictable results if the trust agreement is compromised. For example, cloud computing is one of the bad results that the country has cut off its support on a country or company basis. In terms of security, countries must have their own cloud computing server systems.

Advantages;
Variable cost instead of capital investment: Instead of making large investments in data centers and servers that you don't know how to use, you can only pay for the resources it uses and the time you use it.

Benefit from the advantages of large-scale use: You can benefit from low usage costs that you cannot reach yourself by using cloud computing. With hundreds of thousands of customers in the cloud, large service providers can reach more affordable costs on large scales, which reduces pay as you go.
Stop capacity estimation: Stop anticipating the capacity needs of your infrastructure. If you determine the capacity before you distribute the application, you may have to pay high wages for the resources you have paid, or you may

have to manage with insufficient capacity. Cloud computing eliminates these problems. You can access the desired size of resources and increase or decrease the scale as required by just a few minutes in advance.

Get faster and more agile: In the cloud computing environment, new IT resources are just a click away. This allows you to reduce the time it takes to deliver these resources to software developers from a few weeks to a few minutes. This significantly increases the agility of the organization as it pulls down the costs and time required for testing and development.

Stop running data centers and spending money on maintenance: Focus on projects that will make a difference for your business, not infrastructure. With cloud computing, you can focus on your customers rather than server staging, editing, and infrastructure provisioning.

Turn to the world in minutes: Deploy your app to different regions around the world in just a few clicks. This allows you to easily and cost-effectively reduce latency and offer a better experience to your customers.

Disadvantages;
Security: Cloud companies are becoming an open target for attackers because many companies or customers receive service. The cloud computing firm must maximize its security level.

Privacy: The firm or customers receiving services from the Cloud Computing Company register their data on the server computers. These data should not be available to unauthorized persons.

Continuity: The service provided by the cloud computing company should be continuous. Any interruption in service will affect the workflow of all customers.

Cloud Computing Server Installation
We can turn a Linux-based computer into a cloud computing server. A cloud computing system can be prepared with ownCloud, which is open source and free. Official site is www.owncloud.org. ownCloud is the most simple way to file or document share data. With ownCloud all your data is where ever you are; accessible desktop or mobile devices, any time. You can install ownCloud Community edition.

ownCloud required one of them Linux distributions.

- Centos Linux 6 and 7
- Debian 7 and 8
- Fedora 27 and 28
- Red Hat Enterprise Linux 6 and 7
- SUSE Linux Enterprise Server 12 with SP1, SP2 and SP3
- openSUSE Tumbleweed and Leap 15.0, 42.3
- Ubuntu 16.04 and 18.04

It required Apache 2.4 Web server and Php 5.6 or above. Database can be one of them;

- MySQL or MariaDB 5.5+
- Oracle 11g
- PostgreSQL
- SQLite

We will use Ubuntu 16.04 Linux to install ownCloud.

ownCloud installation steps on Ubuntu 16.04 are below;

Step 1: Apache2 Install (Web Server)

sudo apt install apache2

After Apache2 installation run this command

sudo sed -i "s/Options Indexes FollowSymLinks/Options FollowSymLinks/" /etc/apache2/apache2.conf

Next run commands

sudo systemctl stop apache2.service
sudo systemctl start apache2.service
sudo systemctl enable apache2.service

Step 2: MariaDB Install (Database)

ownCloud requires a database server software.
Run this command

sudo apt-get install mariadb-server mariadb-client

After MariaDB installation run this command

sudo systemctl stop mysql.service
sudo systemctl start mysql.service
sudo systemctl enable mysql.service

After that, run the commands below to give security information of MariaDB server.

sudo mysql_secure_installation

Give database password and other informations.

Run with this command to start database server

sudo systemctl restart mysql.service

Step 3: Php and related modules install

PHP 7.1 isn't available on Ubuntu default repositories. In order to install it, you will have to get it from third-party repositories.

Run the commands below to add the below third-party repository to upgrade to PHP 7.1

sudo apt-get install software-properties-common
sudo add-apt-repository ppa:ondrej/php

Then current Php upgrade to PHP 7.1
sudo apt update

Run these commands install PHP 7.1 and related modules.

sudo apt install php7.1 libapache2-mod-php7.1 php7.1-common libapache2-mod-php7.1 php7.1-mbstring php7.1-xmlrpc php7.1-soap php7.1-apcu php7.1-smbclient php7.1-ldap php7.1-redis php7.1-gd php7.1-xml php7.1-intl php7.1-json php7.1-imagick php7.1-mysql php7.1-cli php7.1-mcrypt php7.1-ldap php7.1-zip php7.1-curl

After install Php 7.1 edit config file with nano

sudo nano /etc/php/7.1/apache2/php.ini

Then make the change the following lines below in the file and save.

file_uploads = On
allow_url_fopen = On
memory_limit = 256M
upload_max_filesize = 64M
max_execution_time = 360

Step 4: Create your OwnCloud Database

Now that you've install all the packages that are required, continue below to start configuring the servers. First run the commands below to create OwnCloud database.

Run the commands below to logon to the database server. When prompted for a password, type the root password you created above. You will open MariaDB command console.

sudo mysql -u root -p

Then create "owncloud" database. Database name is owncloud

CREATE DATABASE owncloud;

Create a database user called "ownclouduser" with new password. Example : own12345

CREATE USER 'ownclouduser'@'localhost' IDENTIFIED BY ' own12345';

Then grant the user full access to the database.

GRANT ALL ON owncloud.* TO 'ownclouduser'@'localhost' IDENTIFIED BY 'own12345' WITH GRANT OPTION;

Save your changes and exit

FLUSH PRIVILEGES;
EXIT;

Step 5: Download OwnCloud Latest version

Download OwnCloud free copy latest release from site to /tmp folder. The community edition will be download. It may take some time according to your internet speed.

cd /tmp && wget https://download.owncloud.org/community/owncloud-10.0.3.zip

Unzip downloaded zip file. If unzip command not found then install unzip. (sudo apt-get install unzip)

unzip owncloud-10.0.3.zip

Move folder new location

sudo mv owncloud /var/www/html/owncloud/

Then run these commands below to set the correct permissions for OwnCloud to function.

sudo chown -R www-data:www-data /var/www/html/owncloud/
sudo chmod -R 755 /var/www/html/owncloud/

Conclusions

With the ownCloud system, small or medium sized companies can install their own cloud systems. It is enough to install the public version on their servers. In this way, they can share their files securely. Files can only be accessed from their network. The philosophy of general public license (GPL) responds to many needs without paying any price. ownCloud system is one of them. There is always no need to pay a large amount for a good information system. Sometimes a free software can do a lot more work. In a few steps as described above, we were able to establish our own cloud computing system.

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