CMPE 283 Worksheet 02

Project 02

Deadline 0900 Wednesday, October 8

Classwork

In this class we will continue setting up our droplets and Linux on our own computers.

Students who wish to set up a virtual server on a different provider from Digital Ocean or who want to use different operating system choices are absolutely free to do so. You should note that the instructions in the worksheet may not work exactly in other Linux distributions, though they will almost certainly work with slight modifications.

Any student who does not want to set up a droplet for money reasons, should contact me immediately so we can look for ways to solve the problem.

You should also note that your lecturer has not used Microsoft software at all for the past 14 years, so I will not have the knowledge to help you solve problems with Microsoft software, though you are, of course, free to use it if you have the necessary licences and are prepared to make the effort to support it yourself.

Setting up Linux as an alternative boot on your own computer will make it easier for you to experiment and learn offline and make certificated access to your droplet or other server easier. I strongly recommend you do this.

You should be able to do many of the tasks required from this course from a tablet or even a smart phone. However, the easiest and most productive way to do the practical work in this course will be from a personal computer with Linux installed. Solving the problems you will encounter with *any* method of accessing your server is *part of the course.*

Setting up Linux on your own computer

If you have not yet done this, do it now.

I have a couple of USB sticks with Ubuntu on that you can use in the labs.

1. Backup the data on your computer.

2. Boot Ubuntu from a USB stick. 64 bit verion is preferable on a modern computer, essential if RAM is more than 2 Gbyte.

3. Check that internet access and some common functions are working in the Ubuntu booted from USB stick.

4. If all is ok click "Install" and follow the on screen instructions.

Doing more to set up your droplet

I suggest you have Linux up and running on your computer while you are working on the server it will be handy, and also good practice.

If you do not yet have Linux on your computer, you will need to use a program like Putty to access your droplet.

Another useful thing to do. Open a text file in a text editor and keep it open on your desktop. The linux program is gedit. Write everything you do into the file. Copy/paste error messages you get there. Save the file frequently. This a record for you and also for anyone else (me in this case) who needs to help you. Believe me, having a record of what you did to "get into this mess" will save you hours of heartbreak later.

Now we will do some configuring. To do this we will need to edit some text files. So we will install the simplest text editor – nano. You know how to do that by now. Do not forget that we have not yet set up sudo on the server. Use

```
su
```

To become root (You will need to enter the root password) Once you have installed nano, by using apt-get, type

```
exit
```

to stop being root.

In Debian Linux system wide configuration files are kept in the /etc directory and its subdirectories.

So let's go there. We need to be root again to have access to these files. Type

```
su
```

to become root

```
cd /e
```

then tab then return. Quicker, isn't it?

do

```
ls
```

to see what is there.

Lots of config files and config directories.

We are going to change our port for accessing the system to a non-standard port and ban logins as root. The first stops drive by login attempts. The second means that you need two passwords to become root.

To do this we will edit the SSH config file, `sshd_config`. Be careful. We can make the system inaccessible via SSH, if we get this wrong. The advantage of a virtual server is that there is always another way in, via the web interface, so we can fix any messes we make.

The config file we need to edit is in the `/etc/ssh` directory

type

```
cd ssh
```

to go there.

Now type

```
ls
```

to see which files are there.

Let's make our port number 1729. Why? It is unassigned and it has a very nice history. Google "1729", when you have time, it is a lovely number.

Edit `sshd_config` by typing

```
nano sshd_config
```

Did you use tab completion to enter that file name? Good!

Find the line with Port. Change the number to 1729. Make sure that there is no "**#**" at the beginning of the line as that turns a line into a comment

Find the line beginning PermitRootLogin. Change yes to no.

exit nano and say yes to saving the file.

You have now changed the configuration file for the SSH daemon (a daemon is a program that runs all the time waiting for something to do). But the program only reads its configuration file when it starts up, or when you tell it to.

Type

```
service ssh reload
```

to get the ssh daemon to reread its configuration.

Why did we do all this?

Type

```
cat /var/log/auth.log
```

This lists the contents of the file where all login attempts are recorded. You should see your own login there. If you do not see any other, failed, attempts, you have been lucky.

If the file scrolls off the screen, type

```
cat /var/log/auth.log | less
```

the — is a special character you will need to search for on your keyboard, not always in the same place.

Cat simply takes the contents of a file and transfers it to the screen, or if you "pipe" it using —, to another program. Less is a program that lets you scroll through its input, using page up page down. Type q to get out of less.

Now type

```
exit
```

to stop being root, then

```
logout
```

to leave the system and let us see if we can now login.

Use the up arrow key to try our last login. It should not work. Now try

```
ssh -p1729 root@<ip no>
```

It also should not work.

Now try

```
ssh -p1729 yourname@<ip no>
```

and your own password

This should now work.

Type

```
su
```

and enter the root password to become root again.

Installing software

Now we can install some more software that we will need.

```
apt-get install rsync rkhunter logrotate apache2 mc php5 apticron backup2l
```

What are these programs for?

- rsync a file transfer program that only transfers the files that have changed since the last backup

- rkhunter a root kit hunter to check your system has not been compromised

- logrotate manages your log files so you know what's been going on in the system without completely filling your disk.

- apache2 is a web server

- mc a slightly better editor and navigator than nano

- php5 a (not very nice) web programming language that we need for some other programs we will install

- apticron checks regularly to see if any of your installed packages are out of date and emails you if they are.

- backup2l a very basic change based backup utility that keeps a history of backups.

Now do

```
service apache2 start
```

to start up apache (it may already be started)

Open a new tab in your browser and enter the ¡ip no¿ for the droplet in the browser address bar.

You should get the default apache web page.

Now do

```
service apache2 stop
```

Try reloading the web page. It should be gone.

We haven't secured apache yet, so we will leave it turned off.

Assignment

1. Finish up what you started in class. Be prepared to show what you have done in the next lab class.

2. Write up an account of what you did and what you learned. What was wrong or missing in these instructions? Could you now explain what you have done so far to a friend?

3. post your account to online.bilgi.edu.tr along with a link to your droplet.

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