

FIRST TERM ASSESSABLE ACTIVITY

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Date: 30/11/2020

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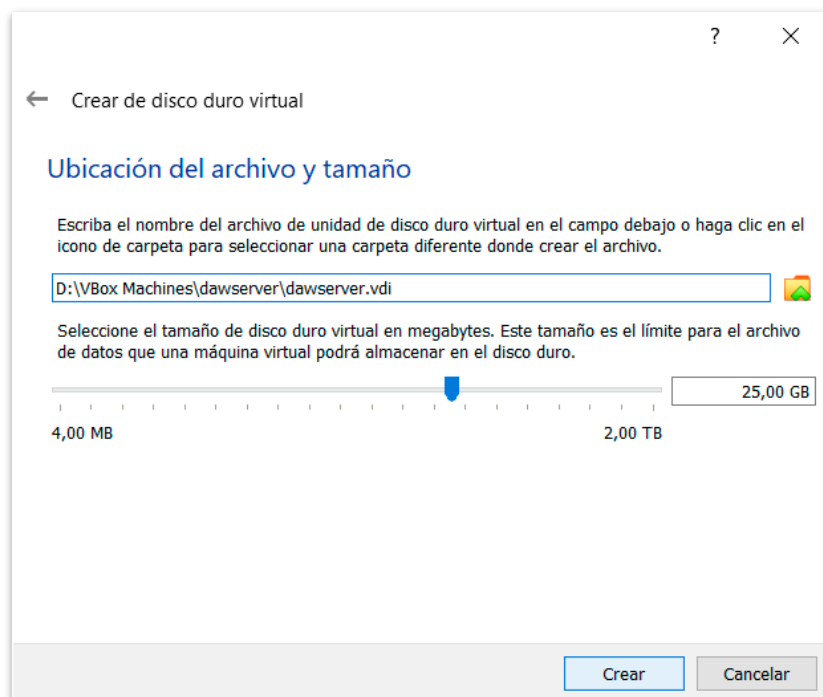
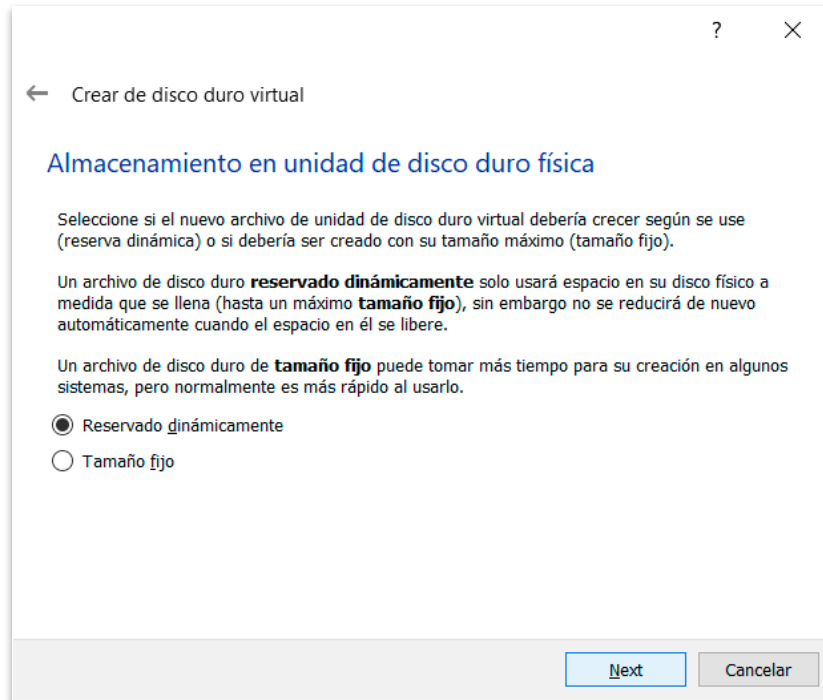
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1. New Linux virtual machine with a 25GB hard drive (dynamically allocated), hostname dawserver, user admin20, password #Daw2020 and Webmin installed.

First of all, I'm going to create the virtual machine. I select the amount of memory RAM (2gb) and create the VDI with dynamically allocated hard disk file.

Finally, I will choose the location of hard disk and its size (25Gb). In this way, the virtual machine will use the minimal necessary space, with maximum of 25GB.



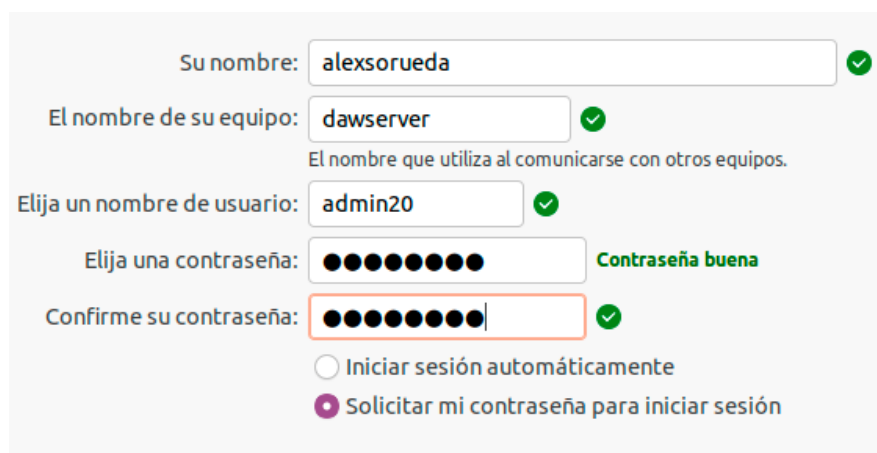
Now the virtual machine is created, so i choose the OS iso file and the installation will start. I'm going to use ubuntu desktop 20.04 LTS.

During the installation, the system requires the username, nameserver and password. I'm going to set:

user: admin20

Server's name: dawserver (it can be changed later in `/etc/hostname` directory file, using command `sudo nano`)

Password: #Daw2020

A screenshot of the Ubuntu installer's language selection screen. The interface is in Spanish. It features several input fields with green checkmarks indicating successful validation: 'Su nombre:' (Your name) with 'alexsorueda', 'El nombre de su equipo:' (Your computer name) with 'dawserver', and 'Elija un nombre de usuario:' (Choose a username) with 'admin20'. Below these, there are password fields: 'Elija una contraseña:' (Choose a password) and 'Confirme su contraseña:' (Confirm your password), both filled with black dots. A green message 'Contraseña buena' (Good password) is displayed next to the first password field. At the bottom, there are two radio button options: 'Iniciar sesión automáticamente' (Log in automatically) and 'Solicitar mi contraseña para iniciar sesión' (Request my password to log in), with the second option being selected.

Once installed, update repositories and upgrade.

So let's open terminal and write `sudo apt-get update` and `sudo apt-get upgrade`

Checking the hostname is dawserver with `sudo nano /etc/hostname` to see it's right.

```
admin20@dawserver: ~
GNU nano 4.8 /etc/hostname
dawserver

[ 1 línea leída ]
^G Ver ayuda ^O Guardar ^W Buscar ^K Cortar Tex ^J Justificar ^C Posición
^X Salir ^R Leer fich. ^\ Reemplazar ^U Pegar ^T Ortografía ^_ Ir a línea
```

And the hosts list with `sudo nano /etc/hosts`.

```
admin20@dawserver: ~
GNU nano 4.8 /etc/hosts
127.0.0.1 localhost
127.0.1.1 dawserver

# The following lines are desirable for IPv6 capable hosts
::1 ip6-localhost ip6-loopback
fe00::0 ip6-localnet
ff00::0 ip6-mcastprefix
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters

[ 9 líneas leídas ]
^G Ver ayuda ^O Guardar ^W Buscar ^K Cortar Tex ^J Justificar ^C Posición
^X Salir ^R Leer fich. ^\ Reemplazar ^U Pegar ^T Ortografía ^_ Ir a línea
```

Now, to Install Webmin I write in terminal:

`wget http://prdownloads.sourceforge.net/webadmin/webmin_1.881_all.deb`

and then `sudo dpkg --install webmin_1.881_all.deb`

I need install the dependencies with `sudo apt-get install perl libnet-ssleay-perl openssl libauthen-pam-perl libpam-runtime libio-ptyperl apt-show-versions python`

I have had problems with the installation, so i have to run `sudo apt-get -f install`

One installed, I run firefox browser and write the direction <https://dawserver:10000/>

Log in with user: admin20, and password: #Daw2020

Later I update webmin to latest version and install package updates.

Now webmin is finally installed.

2. DNS server configured to manage a domain with same name as your mail plus ".org" (for example, pauminyana.org, use the mail name included in moodle, exclude punctuation marks or symbols); from now we will call it "mailname". Add also subdomains server.mailname.org (dawserver machine) and client.mailname.org (client machine). Use as client the Linux client used in previous activities or your physical machine to test that the DNS server works properly.

First of all I'm going to install BIND DNS Server from Un-used Modules in webmin panel.

Once installed, refresh modules to see the module installed in the panel.

Configurar DNS en configuración -> red -> ajustes -> IPv4

I do click on BIND DNS Server and create a master zone in Existing DNS zones.

The screenshot shows the 'Create Master Zone' webmin interface. The form is titled 'New master zone options' and contains the following fields and options:

- Zone type:** Radio buttons for 'Forward (Names to Addresses)' (selected) and 'Reverse (Addresses to Names)'.
- Domain name / Network:** Text input field containing 'alexsorueda.org'.
- Records file:** Radio buttons for 'Automatic' (selected) and a file selection icon.
- Master server:** Text input field containing 'dawserver'. A checkbox 'Add NS record for master server?' is checked.
- Email address:** Text input field containing 'admin20@alexsorueda.org'.
- Use zone template?:** Radio buttons for 'Yes' and 'No' (selected).
- IP address for template records:** Text input field.
- Add reverses for template addresses?:** Radio buttons for 'Yes' and 'No' (selected).
- Refresh time:** Text input field containing '3600' and a dropdown menu set to 'seconds'.
- Expiry time:** Text input field containing '1209600' and a dropdown menu set to 'seconds'.
- Transfer retry time:** Text input field containing '600' and a dropdown menu set to 'seconds'.
- Negative cache time:** Text input field containing '3600' and a dropdown menu set to 'seconds'.

A yellow 'Create' button is located at the bottom left of the form.

Now I create subdomains server and client with assigned IP for each domain.

←

Create Master Zone

↺

■

New master zone options

Zone type

☐ Forward (Names to Addresses)
☒ Reverse (Addresses to Names)

Domain name / Network

192.168.1

Records file

☒ Automatic
☐

Master server

dawserver

☒ Add NS record for master server?

Email address

admin20@alexSORUEDA.org

Use zone template?

☐ Yes
☒ No

IP address for template records

Add reverses for template addresses?

☒ Yes
☐ No

Refresh time

3600

seconds

Transfer retry time

600

seconds

Expiry time

1209600

seconds

Negative cache time

3600

seconds

➕ Create

And the reverse address for each virtual machine.

←

Reverse Address Records

In 192.168.1

↺

↻

■

Add Reverse Address Record

Address

192.168.1.2

Time-To-Live

☒ Default
☐

seconds

Hostname

server.alexSORUEDA.org

Update forward?

☒ Yes
☐ No

➕ Create

Show records matching:

🔍 Search

It has to seems like that:

☒ Select all
☐ Invert selection

Address	TTL	Hostname
<input type="checkbox"/> 192.168.1.2	Default	server.alexSORUEDA.org.
<input type="checkbox"/> 192.168.1.4	Default	client.alexSORUEDA.org.

☒ Select all
☐ Invert selection

➕ Delete Selected

Apply configuration again.

And we can check the domains with `nslookup` command in terminal.

```

admin20@LinuxClient: ~
admin20@LinuxClient:~$ nslookup 192.168.1.2
2.1.168.192.in-addr.arpa      name = 192.168.1.2.

Authoritative answers can be found from:

admin20@LinuxClient:~$ nslookup 192.168.1.4
4.1.168.192.in-addr.arpa      name = 192.168.1.4.

Authoritative answers can be found from:

admin20@LinuxClient:~$

```


They are successfully created.

3. FTP server configured to allow connections using the server's user and password configured this way.

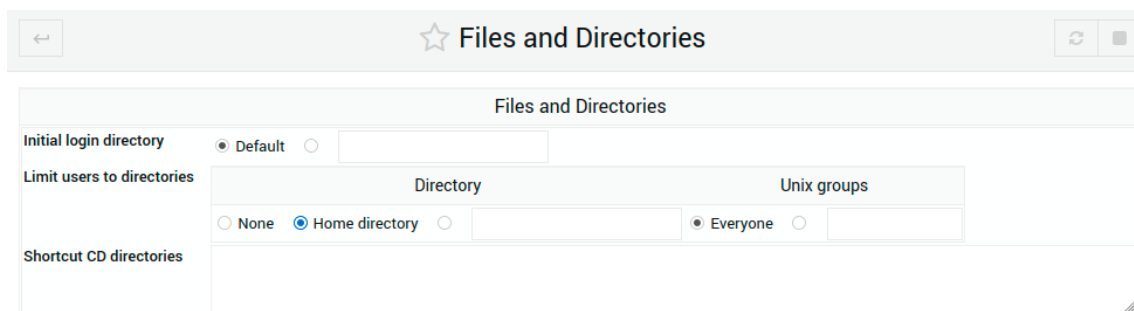
First I'm going to install [ProFTP Server](#) from [Un-used Modules](#).

Once installed click on [refresh modules](#).

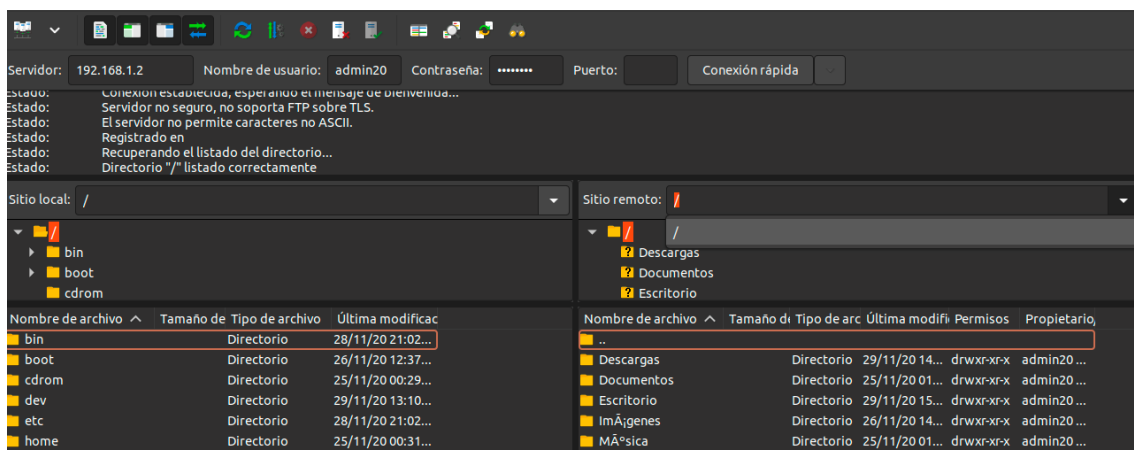
3.1 User must be jailed in his own user directory, can't access further information.

In proFTP Server, I go to [Files and Directories](#) and select option “[Limit users to directories](#)” to [Home directory](#).

In this way, users can only navigate in their own users directories.



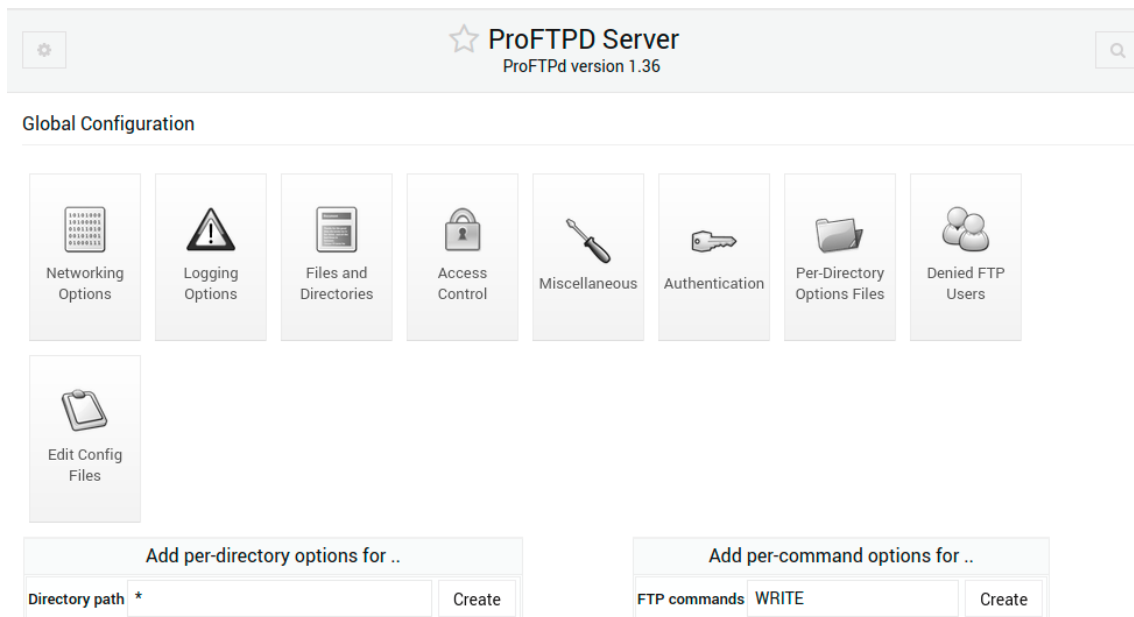
Let's check it in Fillezilla from LinuxClient, log in with user: admin20.



As we can see, the user only can see files in their own directory.

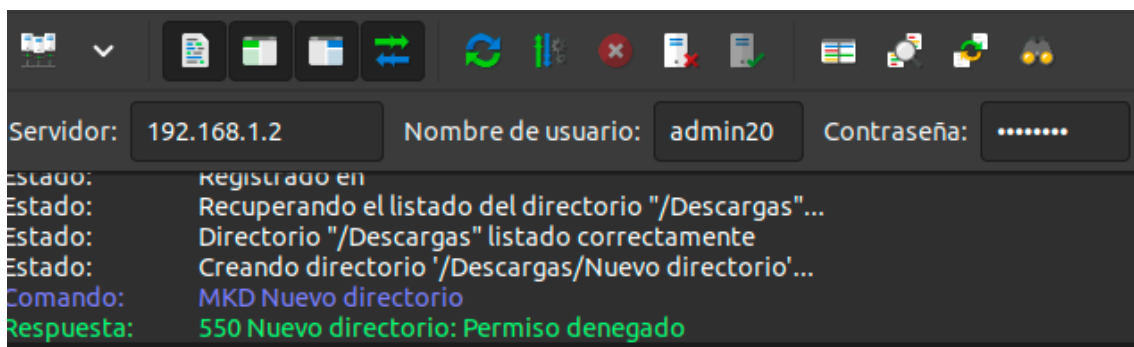
3.2 User won't have WRITE permissions.

Now I'm going to configure WRITE permissions for all directories (*) in [Add per-directory options for...](#)



And in access control, I select **Deny** and **All** for actions.

Now I check in LinuxClient with FileZilla that the server denies the user to create a new directory.



Now users are jailed in their own directories.

4. Web server with the default virtual host `server.mailname.org` configured this way:

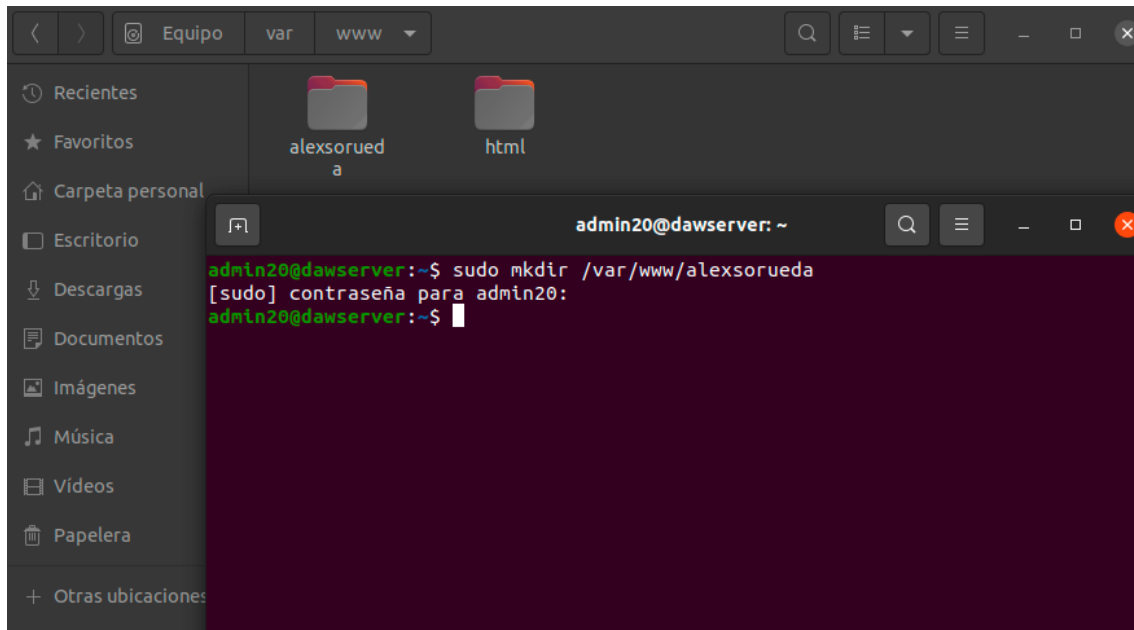
4.1 The following folder structure. Remember to change “mailname” to the designed name.

First, I’m going to install Apache.

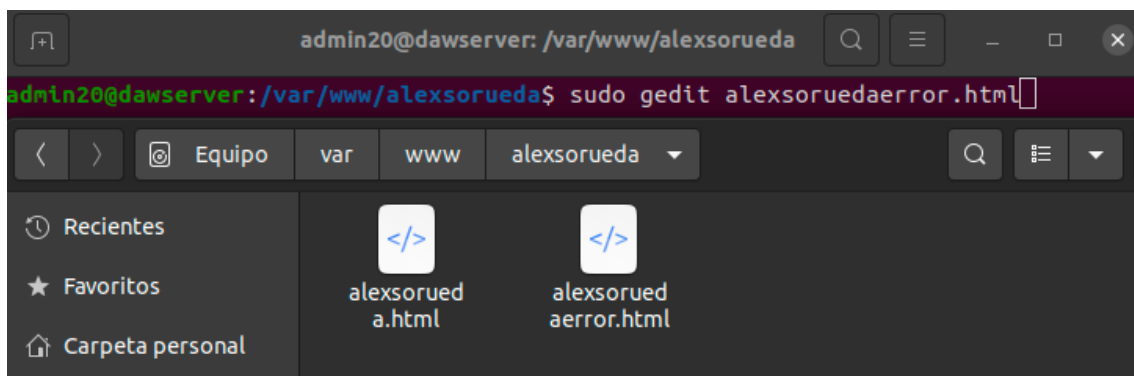
First let’s update Ubuntu repositories with `sudo apt-get update`.

To install apache, I write in the terminal: `sudo apt-get install apache2`

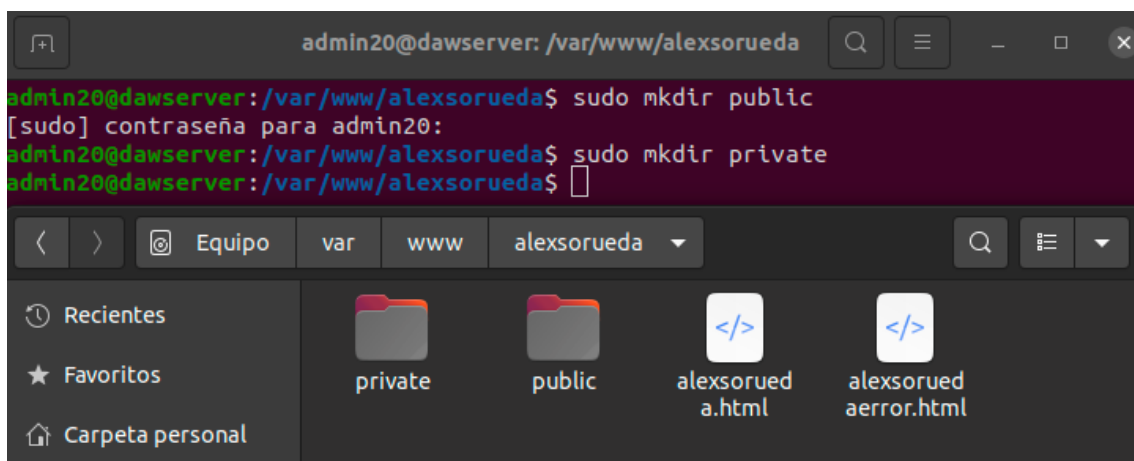
Once installed, I’m going to write in terminal `sudo mkdir /var/www/alexsorueda` to create a new directory.



To create new files, I'm going to write `sudo gedit filename` in `.../alexsorueda/` directory.



Now, I create public and private files and directories.





The same for private folder.

4.2 The root directory will be ".../mailname/"

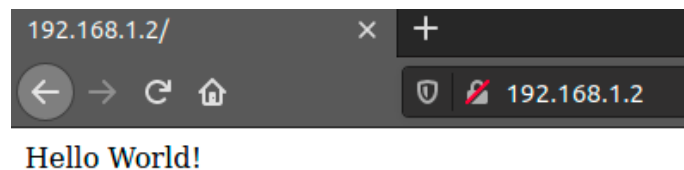
First, I'm going to write in the terminal `sudo nano /etc/apache2/sites-available/000-default.conf`

And then I modify the line `DocumentRoot` to `.../alexsorueda`



Now `sudo /etc/init.d/apache2 restart` to restart apache and apply the changes.

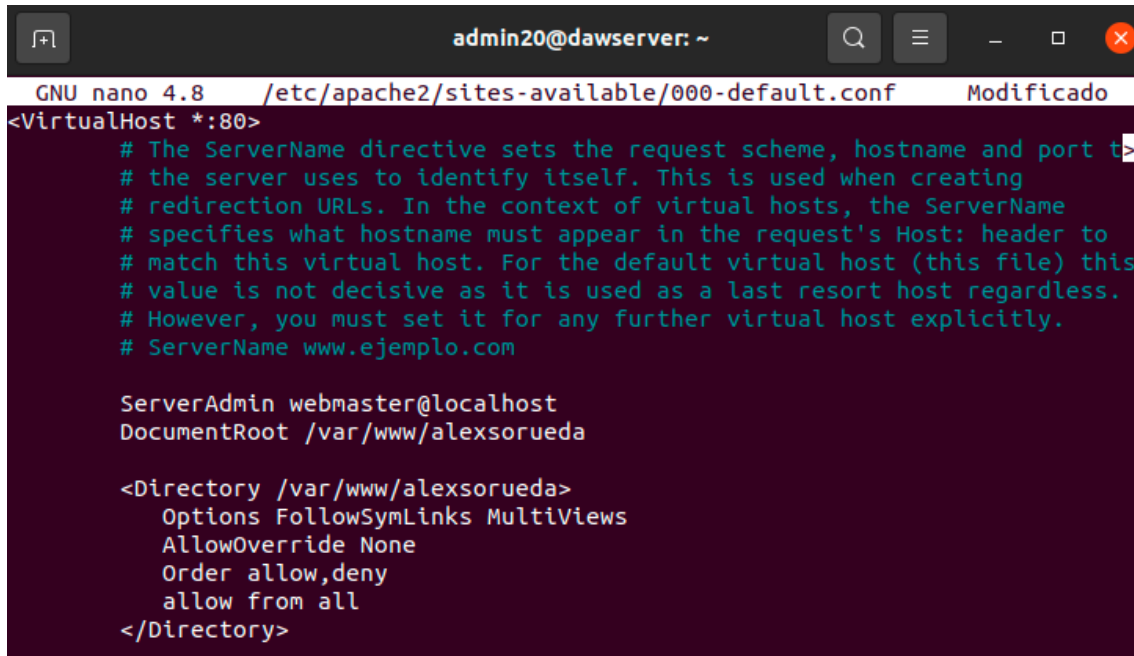
Check in LinuxClient:



(alexsorueda.html file has written `<html> Hello World! </html>`)

4.3 Folder contents will NOT be indexed (shown) by default.

I have to remove the line “Options Indexes”. if it is disabled the server sends a forbidden message.



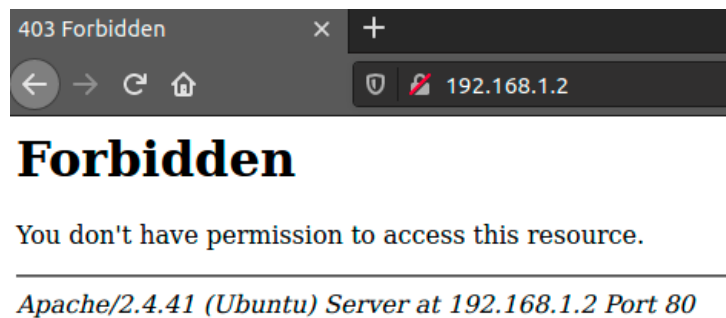
```
GNU nano 4.8 /etc/apache2/sites-available/000-default.conf Modificado
<VirtualHost *:80>
    # The ServerName directive sets the request scheme, hostname and port that
    # the server uses to identify itself. This is used when creating
    # redirection URLs. In the context of virtual hosts, the ServerName
    # specifies what hostname must appear in the request's Host: header to
    # match this virtual host. For the default virtual host (this file) this
    # value is not decisive as it is used as a last resort host regardless.
    # However, you must set it for any further virtual host explicitly.
    # ServerName www.ejemplo.com

    ServerAdmin webmaster@localhost
    DocumentRoot /var/www/alexsorueda

    <Directory /var/www/alexsorueda>
        Options FollowSymLinks MultiViews
        AllowOverride None
        Order allow,deny
        allow from all
    </Directory>
```

Now restart Apache with `sudo /etc/init.d/apache2 restart`

Now check from LinuxClient:



4.4 A request to server. Mailname.org will load mailname.html.

I’m going to add “`DirectoryIndex alexsorueda.html`” to set this page as default one.

```
<Directory /var/www/alexsorueda>
    DirectoryIndex alexsorueda.html
    Options FollowSymLinks MultiViews
    AllowOverride None
    Order allow,deny
    allow from all
</Directory>
```

4.5 In case of error the web server will load mailnameerror.html.

```
ErrorLog ${APACHE_LOG_DIR}/error.log
CustomLog ${APACHE_LOG_DIR}/access.log combined

ErrorDocument 404 /alexSORuedaerror.html
```

We can check it:



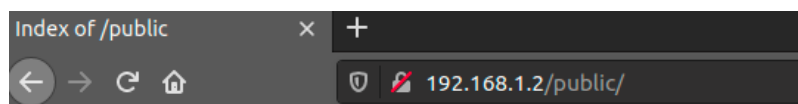
Webpage not found!!

4.6 Folder contents in /public/ will be indexed (shown).



I'm going to add <directory></directory> options to public directory. Now Index option is enabled.

```
<Directory /var/www/alexSORueda/public>
Options Indexes FollowSymLinks MultiViews
AllowOverride None
Order allow,deny
allow from all
</Directory>
```

As we can see in LinuxClient:



Index of /public

<u>Name</u>	<u>Last modified</u>	<u>Size</u>	<u>Description</u>
 Parent Directory		-	
 alexSORuedapublic.html	2020-11-30 19:10	15	

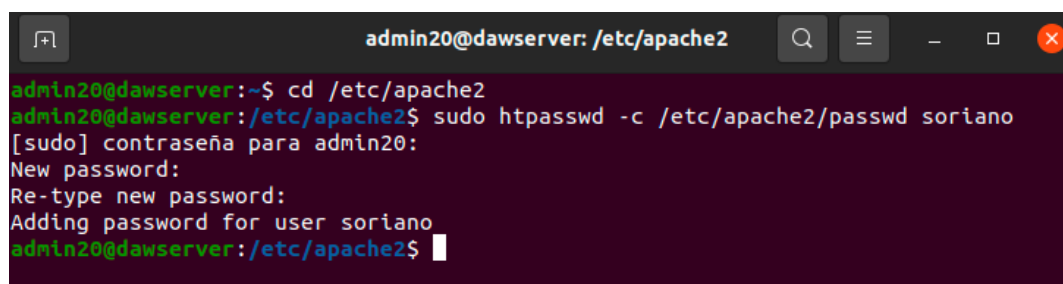
Apache/2.4.41 (Ubuntu) Server at 192.168.1.2 Port 80

4.7 server.mailname.org/private/ will only be accessed by the client IP (linux or main machine, it doesn't matter) and user yoursurname (for example, minyana) using HTTP Basic authentication.

First, I'm going to add `<directory></directory>` options to private directory, and only allow IP 192.168.1.4 (LinuxClient) to access.

```
<Directory /var/www/alexSORUEDA/private>
  Options Indexes FollowSymLinks MultiViews
  AllowOverride None
  Order allow,deny
  allow from 192.168.1.4
</Directory>
```

Then I create the user and password with `sudo htpasswd -c /etc/apache2/passwd soriano`

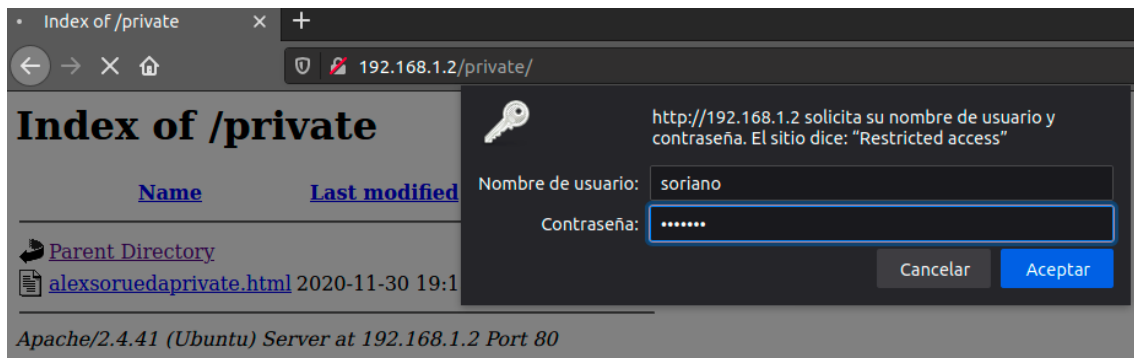


```
admin20@dawserver: /etc/apache2
admin20@dawserver:~$ cd /etc/apache2
admin20@dawserver:/etc/apache2$ sudo htpasswd -c /etc/apache2/passwd soriano
[sudo] contraseña para admin20:
New password:
Re-type new password:
Adding password for user soriano
admin20@dawserver:/etc/apache2$
```

Now I'm going to add these lines to allow user "soriano" access.

```
<Directory /var/www/alexSORUEDA/private>
  Options Indexes FollowSymLinks MultiViews
  AllowOverride None
  Order allow,deny
  allow from 192.168.1.4
  AuthType Basic
  AuthName "Restricted access"
  AuthUserFile /etc/apache2/passwd
  Require user soriano
</Directory>
```

Finally let's check in LinuxClient:



5. Add a second virtual host `daw.mailname.org` that will only be accessed by user `daw` using HTTP Digest authentication. It will only contain a web page called `index.html`

Let's go Webmin and click on BIND DNS Servers -> `alexsorteda.org` and I create the subdomain `daw.alexsorteda.org`

And apply configuration.

Once modify the configuration of the DNS server, we are going to configure Apache to have the two virtual hosts.

I disable the default virtual host and write `sudo a2dissite 000-default.conf` and restart the server.

Now, I'm going to disable the default site to add the new virtual host.

Restart Apache.

And now I'm going to create directories and files with `mkdir` and `gedit` commands.


```
admin20@dawserver: /etc/apache2
admin20@dawserver:~$ sudo nano /etc/apache2/sites-available/000-default.conf
[sudo] contraseña para admin20:
admin20@dawserver:~$ sudo /etc/init.d/apache2 restart
Restarting apache2 (via systemctl): apache2.service.
admin20@dawserver:~$ sudo a2dissite 000-default.conf
[sudo] contraseña para admin20:
Site 000-default disabled.
To activate the new configuration, you need to run:
    systemctl reload apache2
admin20@dawserver:~$ sudo /etc/init.d/apache2 restart
Restarting apache2 (via systemctl): apache2.service.
admin20@dawserver:~$ cd /etc/apache2
admin20@dawserver:/etc/apache2$ sudo mkdir /var/www/html/daw
admin20@dawserver:/etc/apache2$ sudo gedit /var/www/html/daw/index.html

Abrir  index.html  Guardar
/var/www/html/daw

1 <html>
2 <body>
3 <h1> Daw Page </h1>
4 </body>
5 </html>
```

Now i create the file daw.conf:

```
admin20@dawserver: /etc/apache2
admin20@dawserver:~$ cd /etc/apache2
admin20@dawserver:/etc/apache2$ sudo htdigest -c /etc/apache2/daw.digest daw daw
[sudo] contraseña para admin20:
Adding password for daw in realm daw.
New password:
Re-type new password:
admin20@dawserver:/etc/apache2$
```

Now let's modify the file with same content as *000-default.conf* file.

```
ServerAdmin webmaster@localhost
DocumentRoot /var/www/html/daw

<Directory /var/www/html/daw>
    DirectoryIndex index.html
    Options FollowSymLinks MultiViews
    AllowOverride None
    Order allow,deny
    allow from 192.168.1.4
    AuthType Digest
    AuthName "daw"
    AuthDigestProvider file
    AuthUserFile "/etc/apache2/daw.digest"
    Require user daw
</Directory>
```

`sudo a2ensite software.conf` and restart the server.

and lets check if its enabled with `ls -l sites-enabled`.

```
admin20@dawserver:~$ cd /etc/apache2
admin20@dawserver:/etc/apache2$ ls -l sites-enabled
total 0
lrwxrwxrwx 1 root root 27 nov 30 21:23 daw.conf -> ../sites-available/daw.conf
admin20@dawserver:/etc/apache2$
```

6. A third virtual host `ssl.mailname.org` configured to work with HTTPS connections only, with a selfsigned certification. It will only contain a web page called `index.html`